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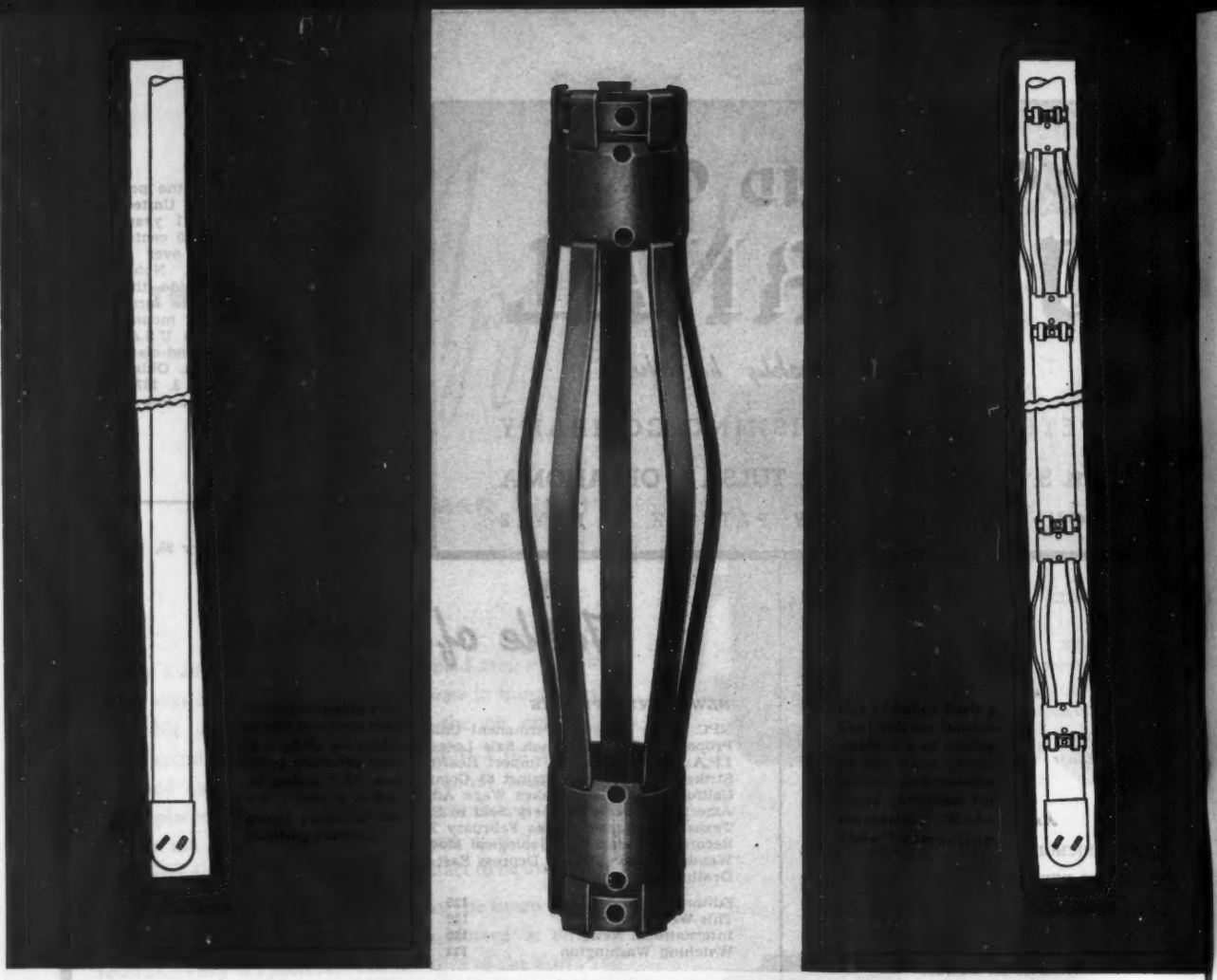

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THE OIL AND GAS JOURNAL

A House in Order

WE submit that the data and analyses presented in this Annual Number are proof that the petroleum house is in order so far as obligations to the public are concerned. The conversion from war to peace is complete in that every demand in a world consuming more oil than it did at the peak of the war is being supplied at price levels substantially below the general commodity indexes.

The petroleum industry has lived up to the promises of last summer when wartime controls were ended. It has made whatever adjustments and expansions were required to supply oil in an economy returning to normal.

The record of the past year is impressive in every phase of petroleum operations. Despite conditions brought about by shortages in other industries and disrupted transportation, oil operators in this country drilled nearly 100 million feet of hole, equivalent to three-fourths of the distance around the world at the equator. Because of this accomplishment in drilling a record crude-oil output was possible, and sufficient oil was discovered in new fields and extensions to more than offset the year's production. Wildcats were drilled to record depths and exploration widened.

Refiners as a group ran more crude oil to their stills than ever before, and through changes in their processing operations provided the greatly enlarged demands for intermediate products. The refiners' ability to supply brought tens of thousands of new customers to the oil industry over the past year. The same situation applied to natural gas, and growth in the distribution of liquefied gases was outstanding.

At the start of a new year the outlook is promising. There is agreement that 1947 demands will exceed the record consumption of 1946. There are those who feel that the stock accumulations of the past year in some products were excessive and they recommend a level in crude-oil production and refinery output slightly below the totals of the past year. Regardless of whether one agrees with this particular recommendation or not it must be recognized that the petroleum industry in this country and elsewhere has ended the deficits of the war period, and postwar markets, as large as they are, can be overproduced. Inventory trends need to be watched closely.

There are, of course, many things yet to be done in rounding out petroleum operations aside from required expansion. Many producers and refiners need to modernize prewar properties and effect long-range operating programs. The rehabilitation of oil installations in war-devastated areas has only started. Rearrangement of operating facilities to conform to changed conditions is necessary for maximum efficiency.

But the first postwar duty was that of supplying existing markets and that objective has been accomplished.

National Petroleum Council Elects Hallanan Permanent Chairman

by Henry D. Ralph

WASHINGTON.—The National Petroleum Council completed its organization for 1947 with the election of Walter S. Hallanan, of Plymouth Oil Co., Pittsburgh, as permanent chairman and H. C. McGowen, of United Gas Co., Shreveport, as vice chairman.

In accepting the chairmanship Hallanan told the council, "We shall be charting new courses in this unique peacetime cooperative effort between Government and the industry we represent. New problems which arise from a vastly changed economic order will confront us as we begin this important undertaking. We are in a new era. We cannot live in the prejudices of the past. We must keep our faces set to the future.

"We have not been asked to surrender our freedom. That has been made crystal clear. We are only asked to cooperate along lines that will aid in the elimination of governmental confusion and in counseling with those who are charged with the responsibilities of national security. These are requests which we should not deny."

Max W. Ball, new director of the Oil and Gas Division, was introduced and outlined his views on the work of the council in promoting cooperation between Government and industry.

The council then took up the report of the agenda committee suggesting subjects for future committee assignments and reports, and heard reports of previous committees on pressure tank cars, material requirements, and the federal leasing act. Government officials also reported to the council on plans of the Geological Survey to explore the Continental Shelf, the synthetic liquid-fuel program of the Bureau of Mines, and the emergency gas lease of the Big Inch pipe lines.

The meeting was marked by an attack on the Anglo-American petroleum treaty and on the council itself from H. J. Porter of Houston, president of the Texas Independent Producers and Royalty Owners Association.

He denounced the treaty as being designed to increase imports of oil and provide a means for federal regulation of the domestic industry and said the council was set up as "just axle grease to keep the buggy ready for the wild ride that domestic production is going to be given when and if that treaty is ratified."

From a defense standpoint it is folly to depend on foreign oil and the sensible thing to do is to build up a domestic synthetic-fuels industry, meanwhile importing moderate amounts of oil but stopping "this silly talk" of shutting in domestic production, Porter said.

He attacked Secretary Krug for favoring regulation of burning flare gas, saying this is a step toward federal control of crude production, and said that since nothing of much importance has been laid before the council, it is evident its purpose is to build up the prestige of the Interior Department to get more power and appropriations, adding that council meetings give the inference the industry needs federal help to run its business.

New Natural Gas Line In Tennessee Proposed

WASHINGTON. — The Federal Power Commission has received an application from Tennessee Natural Gas Lines, Inc., Chattanooga, for authority to construct facilities to make natural gas available to the Chattanooga and Knoxville areas.

The application stated the company has entered into a contract with Tennessee Gas & Transmission Co. whereby the latter has agreed to supply all of the requirements of Tennessee Natural Gas Lines' proposed markets. The present plan involves the construction of a 181-mile, 16-in. transmission line from T. G. & T.'s line to Columbia, Shelbyville, Tullahoma, Cowan, Monteagle, and South Pittsburgh, terminating at Chattanooga. From Chattanooga, a 12¾-in., 106-mile line would run through Riceville, Athens, and Maryville, terminating at Knoxville.

Proposal to Halt Big Inch Sale Loses In Senate Committee Vote

WASHINGTON.—The Senate committee on the armed forces voted six to one Monday to drop further consideration of a resolution to withhold congressional approval, pending further study, of the report of the War Assets Administration proposing to open bids on the Big Inch pipe lines, February 8.

The resolution was introduced by Sen. Joseph C. O'Mahoney of Wyoming, who wants the lines considered in the light of the report of his petroleum-resources committee which has not yet been completed, and was cosponsored by Sen. Chapman Revercomb of West Virginia. Sen. Harley Kilgore of West Virginia cast the dissenting vote. This action apparently forecasts that the Senate will not intervene to stop immediate disposal by WAA, and if Congress takes no action before February 3 the sale can proceed as planned. In the House the committee on interstate and foreign commerce held hearings on a resolution by Rep. Francis Walter of Pennsylvania to delay sale of the lines until 6 months after Congress has received a report from the Federal Power Commission in its general investigation of the natural-gas industry. Walter, testifying for his resolution, said ultimate use of the lines is so important to the economy of the country that Congress should have more time and information before approving a sales policy, pointing out that different WAA administrators have favored different policies and that delays in organization have deprived Congress of half its allotted time to disapprove the latest report. Whatever findings FPC may make regarding expanded use of natural gas, Walter said Congress should have this report before acting.

Administrator Robert M. Littlejohn of WAA said he personally had no objection to a short delay in the sale to give Congress more time for review but that this might interfere with bidders who must make financial commitments before bidding, adding that if there is a long delay he will attempt to extend the interim lease for gas use by Tennessee Gas & Transmission Co.

Chairman Nelson Lee Smith of FPC declined to express any opinion about disposal of Big Inch but said if directed by Congress the commission would make a study of the subject. The commission's report in the gas investigation will not be completed in preliminary form for at least 4 months and all interested parties will then have an opportunity to submit comments before the commission itself write the final report, so it will be at least 6 months before the report gets to Congress.

I.P.A.A. Asks Delay in Import Hearing Until Data Made Public

WASHINGTON.—A demand that further hearings on the proposal to reduce import taxes on petroleum products be postponed until all briefs and information on oil are made public was presented by Russell B. Brown and L. Dan Jones, attorneys for the Independent Petroleum Association of America, at hearings last week before a panel of the Committee for Reciprocity Information in connection with the forthcoming negotiation of reciprocal-trade agreements with 18 other nations.

The chairman of the panel, Commissioner John P. Gregg of the Tariff Commission, replied that under the law all interested parties have the right to submit confidential information and this could not be made public without the consent of those filing. He promised, however, to take under consideration the matter of consulting with parties who have filed petroleum briefs and asking them to make such information public. Brown said he did not know whether or not any brief had been filed in support of a duty cut on petroleum products but he objected to the committee's policy of allowing evidence to be submitted in secret without opportunity for rebuttal.

The attorneys also demanded that the committee publish its findings and recommendations prior to actual negotiation of the new treaties and that it also publish a list of commodities still subject to negotiation following the hearings. Gregg replied that all commodities already on the negotiating list would remain there regardless of data compiled by the committee, though this does not necessarily mean they will be included in the final treaties, and that no additions will be made to the list without public notice. The committee's reports, Gregg added, will not be made public because its duty is simply to compile information for the actual negotiators who will make the decisions, and it would weaken this country's bargaining position to tip its hand to other nations by publishing information about our position.

The hearing then proceeded, and Brown submitted a statistical statement of the growth of U. S. and foreign oil trends, arguing that foreign production, particularly in the Middle East, will increase so as to force much heavier imports into the United States in the next few years. Reminded by Gregg that the negotiations will concern only refined products and not crude oil, Brown insisted that the impact on domestic producers is the same whether imports are in the form of crude or products.

Freedom to import, Brown declared, is a danger to continuance of state conservation programs because refiners can force state commissions to give larger allowables under threat of importing oil. Pointing out that in most foreign countries the subsoil ownership of petroleum is a government monopoly, Brown said our national defense should not be rested on dependence on foreign oil, as its protection might actually be an incentive for war.

He declared that government policy is more important than duties and taxes in determining the quantities of petroleum brought in by the five big groups of companies responsible for most of the international oil shipments, saying that if this committee, as an agency of the federal Government, recommends higher imports of oil the large companies with foreign operations will increase their imports regardless of what the final tax rates may be.

Brown not only opposed all further reduction in import taxes on products but asked that the duty on crude be restored to its former level, saying that under the terms of the escape clause of the Venezuela and Mexico agreements it can be demonstrated that exploration and production in the United States has been injured by imports of crude.

Strike Notice Filed Against 63 Companies

LOS ANGELES.—Strike notices have been filed against 63 California oil companies with the U. S. Department of Labor by J. E. Brown, director of the Oil Workers International Union (C.I.O.), District 1 office at Bakersfield, Calif.

The union has demanded 25 cents an hour higher wages for its members and has warned the oil companies that their failure to grant the raise "may result in the interruption of the production, manufacture, and distribution of petroleum products in the State of California." The strike will begin February 13, according to the notices.

Among the companies with which the union is reported to be in dispute are Standard Oil Co. of California, Shell Oil Co., Inc., Union Oil Co. of California, General Petroleum Co., The Texas Co., Tide Water Associated Oil Co., and numerous independents.

All the oil workers' contracts contain clauses permitting either party to reopen the agreements on 30 to 60 days' notice on the question of wages. The union began reopening of the contracts December 15, it was said.

California Standard Makes Wage Adjustment

A 6-month "living allowance" wage increase of $35 a month for all employes earning less than $345 monthly was announced this week by Standard Oil Co. of California for its employes and those of certain wholly owned subsidiaries.

The allowance, retroactive to January 1, provides that all employes earning between $345 and $380 a month will receive $380. It exempts only certain seagoing and harbor craft personnel, who recently received wage increases, and employes of Standard Stations, Inc., who received increases in June 1946.

In Dallas, J. L. Latimer, president of Magnolia Petroleum Co., announced acceptance by the Associated Petroleum Employes of the company's proposed 12½ per cent pay increase, retroactive to October 1, 1946, and continuing until September 30 of this year.

Latimer said negotiations relative to accepting the company's proposal for employes at the Beaumont and Fort Worth refineries and employes of Magnolia Pipe Line Co., represented by the C.I.O., are continuing.

American Liberty Refinery Sold to Sid Richardson

DALLAS.—Purchase of the 20,000-bbl. daily capacity American Liberty Oil Co. refinery at Texas City, Tex., by Sid Richardson, Fort Worth, has been announced.

The new firm, to be known as Sid Richardson Refining Co., will be headed by Freeman W. Burford, independent operator and former president of the East Texas Refining Co., Dallas. The transaction is to become effective on or about February 1. The new firm's headquarters will be in Dallas but definite location has not been made.

American Liberty, a Dallas company headed by T. Lee Wynn, acquired the Texas City refinery in 1938 by absorption of Southport Petroleum Co. Under the new setup, the plant will eventually be used to process West Texas crude, it was said. In recent months the plant has operated under a reduced schedule due to lack of crude oil. Consideration in the deal was not disclosed.

Texas Commission Raises February Allowable 116,842 Bbl. Daily

by Carl F. Hoot

THE Texas Railroad Commission has raised the February daily allowable 116,842 bbl., to a total of 2,190,348 bbl. daily, or 5.6 per cent, over the January quota. This increase more than offset the 98,294-bbl. cut made in the previous month's daily allocation, and exceeded the Bureau of Mines' February estimate of demand, which remains at 2,030,000 bbl., by 12,500 bbl. daily.

The February net allowable of 2,190,348 bbl. daily, less an estimated underproduction of 6.75 per cent, or 147,848 bbl. daily, is expected to yield 2,042,500 bbl. daily.

The increased daily average production, in most cases, resulted in retaining the same number of producing days in February as in January. East Texas producing days, which remained at 20 for the 28-day month, increased its daily average to 335,007 bbl. in February, or 31,141 bbl. daily over the present 303,866 bbl.

The commission presented a summary of nominations for the past 6 months, together with allowables and actual daily demands. The tabulation indicated that nominations consistently exceeded production by some 15 per cent, but that actual demand, as calculated by the commission, is less than allowables.

H. S. Lane, representing Crown Central Petroleum Co., said that the commission, in its calculation of demand, did not consider crude which independents would buy if it were available. Joe Owens, representing Sun Oil Co., said that production would more nearly approach allowables if unforeseen operating difficulties could be eliminated.

Humble Drawing on Storage

Nelson Jones, Houston, representing Humble Oil & Refining Co., said Humble was drawing on storage at the rate of 56,000 bbl. daily, of which 29,000 bbl. daily was being taken from stocks of West Texas crude.

Commission Chairman E. O. Thompson quoted figures to show United States imports of crude petroleum had increased 13,000,000 bbl. in the first 11 months of 1946 over the corresponding period of 1945, and Tom Pollard, representing Snowden Oil & Gas Co., Dallas, expressed fear that more oil would be imported unless increased demands were met.

Ray Starnes, East Texas independent, opposed any increase in allowable production and said, in reference to the import situation, that a healthy condition existed at this time. He said the commission is not charged with the responsibility of supplying enough crude oil to allow refineries with war-boosted capacities to operate at their new capacity. Starnes asked 19 producing days for East Texas during February. Some operators thought 15 producing days would suffice, it was said.

Jack K. Baumel, chief engineer for the Oil and Gas Division of the commission, said the maximum efficiency rate for all fields totaled 2,801,289 bbl. daily, but restricted pipe-line capacity in Districts 7-C and 8 in West Texas limited that figure to 2,674,946 bbl. daily. He pointed out that West Texas pipe-line capacity is 475,000 bbl. daily, with an indicated need of a 520,000-bbl. daily capacity.

The February allowable by districts compared with the previous month follows:

Dist.	Jan. allow.	Feb. allow.	Change
Southwest Texas:			
1	21,200	21,627	427
2	141,117	154,820	13,703
4	215,537	233,335	17,798
	377,854	409,782	31,928
Gulf Coast:			
3	442,672	483,436	40,764
East Texas:			
5	36,138	38,952	2,814
6	409,070	446,016	36,946
	445,208	484,968	39,760
North Central:			
7-B	39,116	40,729	1,613
7-C	32,606	35,060	2,454
9	145,783	151,584	5,801
	217,505	227,373	9,868
West Texas:			
8	495,927	490,190	—5,737
Panhandle:			
10	94,340	94,599	259
Total	2,073,506	2,190,348	116,842

Pure, Sinclair Open New Florida Products Terminal

PORT EVERGLADES, Fla.—A new 325,000-bbl. petroleum terminal designed to serve southern Florida and Key West was opened here last week with the arrival of the first shipload of gasoline.

The terminal, which has Pure Oil Co. and Sinclair Refining Co. tankage, is equipped to receive products by tanker and distribute them by tank car, truck, and barge.

RECORD ATTENDANCE AT GEOLOGICAL MEETING

The largest number of geologists ever to attend a regional meeting of the American Association of Petroleum Geologists gathered January 16-17 in Wichita, Kans., to hear more than 18 papers discussing new geological findings in the Rocky Mountain and Mid-Continent areas. Registration for the meeting totaled 904. Above are officers and members of the general committee of the Kansas Geological Society who were in charge of arrangements for the Mid-Continent regional meeting. Back row: Lee H. Cornell, Stanolind Oil & Gas Co., vice president, Kansas Geological Society; John W. Inkster, Shell Oil Co., Inc., general committee; E. Gail Carpenter, consulting geologist, president, of the Kansas society; and Virgil B. Cole, Gulf Oil Corp., general committee. Front: E. C. Moncrief, consulting geologist, chairman of the general committee; N. D. Clark, Lion Oil Co., general committee; and Don W. Payne, Sinclair Prairie Oil Co., secretary-treasurer of the Kansas society. Abstracts of papers presented at the meeting were published in The Oil and Gas Journal, January 11, page 43. A further report of the meeting will be found on page 303, this issue

this week

REGULATION—I.P.A.A. opens fight before Committee on Reciprocity Information to prevent further reduction in oil import taxes. . . . Association attorneys demand that all briefs and information filed be made public, but committee holds to State Department position that such data can be kept secret until after trade agreements are signed. . . . ¶Texas Railroad Commission announces hearing to be held soon on proposal to limit directional drilling to 3° deviation. . . .

PRODUCTION—Texas Railroad Commission heeds refiners' pleas for more crude, jumps February allowable 116,842 bbl. daily. . . . ¶U. S. production in week ended January 18 recovers part of previous week's decline, increases 64,625 bbl. daily to average of 4,626,010 bbl. daily. . . .

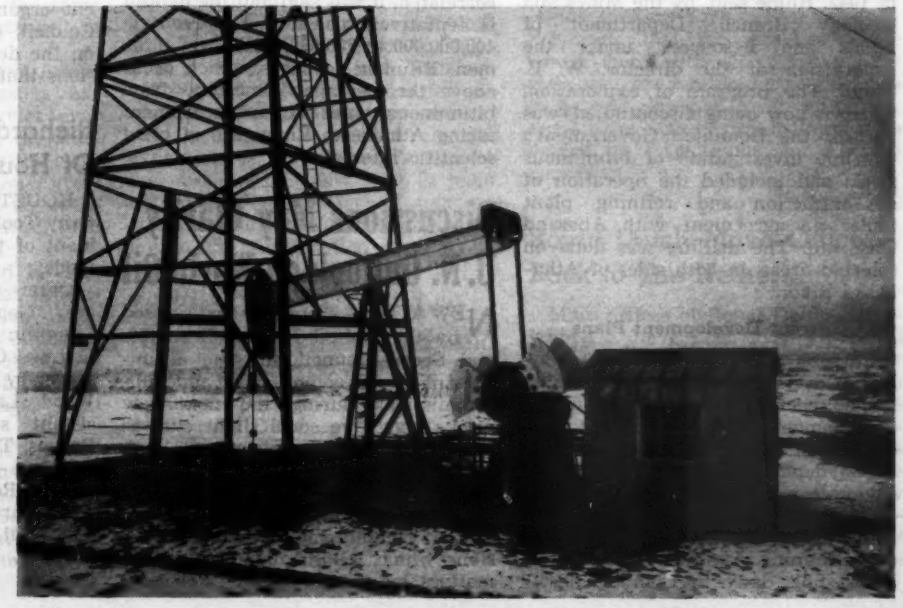
ACQUISITIONS—Sid Richardson buys Texas City refinery of American Liberty Oil and announces new refining company to be headed by Freeman W. Burford. . . . ¶Premier Oil Refining buys half interest in Arp, Tex., plant of Independent Refining Co. . . .

NATURAL GAS—William J. Murray, designated to succeed Beauford Jester as Texas Railroad Commission member, tenders resignation of commission's gas conservation committee and reports that as of March 1945 Texas was flaring 1,600,000,000 cu. ft. daily and that conservation projects under way will cost $103,000,000 and reduce flaring to 880,000,000 cu. ft. daily. . . . ¶Louisiana conservation commissioner seeks legal authority to cancel permit allowing movement of 50,000,000 cu. ft. daily of Louisiana gas into the Big Inch system. . . . Contends permit violates state's policy against exporting natural gas. . . . ¶Tennessee Natural Gas Lines, Inc., proposes construction of 287 miles of 16 and 12 3/4 in. to serve Knoxville and Chattanooga. . . . ¶FPC announces Michigan-Wisconsin Pipe Line has accepted its conditional certificate for the construction of the $52,618,000 Texas-Michigan line. . . . FPC delay in issuing opinion in controversial case arouses speculation as to dispute within commission. . . .

LABOR—Sixty-three California oil companies named in notices filed with Labor Department by C.I.O. oil workers union and setting February 13 strike deadline. . . . Union asserts issue is failure of companies to grant 25-cent raise. . . . ¶Petroleum Committee of International Labor Organization prepares for February 3-12 meeting in Los Angeles. . . . Twelve nations slated to participate. . . .

SURPLUS PROPERTY—Senate and House committees hold hearings on resolutions to block WAA plan for Big Inch sale. . . . O'Mahoney resolution to delay disposal loses in Senate committee vote. . . . House group studies Walter proposal to postpone sale until FPC gas-investigation report is submitted, now due in about 6 months. . . . U. S., Canada reach agreement for the sale of most of the Canol refinery-pipe-line property. . . . Secretary Byrnes says bulk of project has no known economical postwar use. . . . Bids to be asked March 20. . . .

EXPLORATION—California Standard starts search for oil and gas in Washington State. . . . New well, 8 miles northeast of Edmonds in western Washington, drilling below 1,000 ft. . . . ¶Exploratory wells in Big Horn basin, Wyoming, show for possible pool openers. . . . Results of tests on four separate structures arouse renewed interest in inner-basin play in Rocky Mountain area. . . . ¶Noble County is site of first 1947 strike in northern Oklahoma. . . . Discovery well flows 6 to 8 bbl. of oil per hour with large volume of gas. . . .



Symbolic of the increased output which made 1946 a record production year in the history of the oil industry in the United States is this pumping unit in Rangely field, Colorado, where production jumped from 102,644 bbl. in 1944 to 8,018,000 bbl. in 1946. The unit shown here is on one of more than 14 pumping wells, nearly 10 per cent of the field's total number of producers. All pumping units have been installed during the last 6 months. Detailed information on Rangely's production may be found elsewhere in this issue. The Journal's annual forecast and review number

International

WORLD-WIDE OIL DEVELOPMENTS

Discovery of Rich Bitumen Deposit In Northern Canada Reported

OTTAWA.—A rich deposit of bituminous sands possibly containing as much as 500,000,000 bbl. of liquid bitumen has been discovered on the west side of Canada's Mildred-Ruth lakes area, opposite the mouth of Steepbank River, 20 miles north of Fort McMurray, Alta.

All assays are not yet complete, but the deposit reportedly is of high quality with 12 to 18 per cent bitumen by weight. The maximum of fully impregnated sands is about 18 to 19 per cent bitumen by weight.

These disclosures were made here January 22 by Dr. G. S. Hume, head of Canada's Bureau of Geology and Topography, in a talk before the Canadian Institute of Mining and Metallurgy.

Drilling in areas within the bituminous sands of northern Alberta to locate a sufficiently extensive and rich deposit to support a large commercial production of oil was initiated in 1942, Hume said, by the Mines and Geology Branch, Department of Mines and Resources, under the supervision of the director, W. B. Timm. The program of exploration, which is now being discontinued, was part of the Dominion Government's wartime investigation of bituminous sands and included the operation of an extraction and refining plant under an agreement with Abasand Oils, Ltd. The drilling was done on selected areas on both sides of Athabaska River.

Current Development Plans

Current plans call for this Dominion Government operation being turned back to Abasand for future development. The contract has been drawn up but not yet finalized.

The deposit is considered of considerable importance, but whether it can be developed economically at the present time is not yet known. Canada's declining crude-oil production—20,620 bbl. daily in October 1946—makes the discovery particularly significant.

The quality of the deposit is variable, partly due to interfingering of clay and shale bands with the bituminous sands and partly due to variable richness of the sands themselves, Hume explained. The bituminous sands have a thickness up to 220 ft., but there is considerable variation in thickness due to erosion of the surface prior to glacial deposition.

The size of the area drilled on ¼ to ⅛-mile spacing is about 2 sq. mi., with a much larger area on ½-mile spacing. Liquid bitumen occurs interstratified with the bituminous sands. The beds of liquid bitumen are a few inches to 21 ft. in thickness with 57 ft. aggregate thickness in Hole B-15. A body of liquid bitumen (25 per cent sand content) as in Hole B-15, has 330,000 to 350,000 bbl. per acre, Hume explained.

The various holes are not easily correlated, it was said, but the deposit is tentatively considered to contain 400,000,000 to 500,000,000 bbl. of bitumen. Bitumen seepages, which occur above the Devonian limestone from bituminous sands on an escarpment facing Athabaska River, are of great scientific interest.

Discussions May Clarify U. N. Outlook on World Oil

NEW YORK.—Topics to be discussed by the United Nations Economic and Social Council and the all-important U. N. commissions and subcommissions during the next few weeks may give some slight clue as to U.N. outlook on international oil.

Not a great deal of information is currently available, and what is can be gained mostly from a glance at the type of commissions and subcommissions which will be handling global matters between now and February 28—convening date of the Economic and Social Council itself.

The Economic and Employment Commission of the Economic and Social Council has been directed to set up two subcommissions, one on even employment and economic stability, and the other on economic development. Indications are that the economic and development subcommission may discuss the international oil picture—particularly in the light of current Middle East negotiations.

Then there is the fact that Economic and Employment Commission, acting under a General Assembly resolution, is slated to make proposals to the council on the possibilities for a survey of raw materials. Petroleum probably will be included. Another General Assembly resolution deals with the possibility of furnishing expert technical advice to member nations. China has already proposed establishment of an international code for foreign investments.

Another item calls for consideration of a survey of the economic development of less-developed areas, based on a proposal made to the council by the United States joint proposals submitted by several Latin American governments.

As a recent U.N. weekly bulletin points out: "Though it is for the parent organ, the Economic and Social Council, to make the decisions, it is on the detailed work of the commissions that these decisions are based."

Richards New Head Of Houston Nomads

HOUSTON.—Charles E. Richards, Gray Tool Co., has been elected president of the Houston chapter of Nomads.

Other new officers of the group are: George E. Tyson, Jones & Laughlin Supply Co., vice president; C. Luke Clausel, A-1 Bit & Tool Co., secretary - treasurer; Herschel J. Wood, Lebanon Steel Foundry, assistant secretary - treasurer; Jack Barnes, Trinity Portland Cement Co., sergeant - at - arms; Edwin Ross, Baash - Ross Tool Co., deputy sergeant - at - arms; and Charles W. Thornhill, Thornhill-Craver Co., and Floyd L. Senter, National Tank Co., regents.

Treaties Improve Outlook For Property Restoration

NEW YORK.—The outlook for American and British companies to recover a part of their confiscated Central European oil properties appears somewhat better in view of the signing of the Hungarian and Romanian peace treaties and reports indicating the Russians have relaxed slightly their grip on Austrian production.

Industry officials here considered that the treaties give the companies a much better chance of collecting unpaid amounts due on deliveries on oil already made. In Hungary, where European Gas & Electric Co., 90 per cent owned by Standard Oil Co. (N. J.) has the only significant commercial production, the company has been paid barely enough to continue operations without even sufficient funds to buy tires for trucks. In Romania, the Jersey affiliate is deeply in debt, largely due to political interference.

The peace treaties signed January 20 provide for properties transferred to the Nazis under duress to be returned. If restoration is impossible, "fair compensation shall be made therefore" by former enemy countries. In both Romania and Hungary, all legal rights and interests of United Nations and their nations are to be restored as they existed on September 1, 1939. However, officials here said it will be many months before operations reach near normal. Current Romanian and Hungarian production of Jersey Standard is 12,500 bbl. in each country.

Earlier, a report from Vienna said one British company is being paid its oil production costs by the Russians. A spokesman here for Socony-Vacuum Oil Co., Inc., said the same "courtesy" has not been extended to his organization.

The ownership of British and American oil properties in Austria has been contested by the Soviet ever since the end of hostilities, the Russians holding that they have the right of control under the Potsdam Agreement, a point that has been vigorously opposed by United States oil men and the U. S. Government.

The British firm, Richard K. Van Sickle Exploration Co., which reportedly is receiving production costs, threatened to withdraw its employes unless the Russians cooperated. Production costs have been paid to date in order to retain a stronger legal title to the properties.

Socony-Vacuum states that although it is still managing its Austrian oil properties that the supervision is Russian directed and that the Soviet still decides on the oil's destination, with only continued promises to pay at some future time.

To date millions of schillings are on the books as payment due Socony-Vacuum. (A United States dollar in Austria is currently worth 9.86 schillings).

Socony-Vacuum's current daily Austrian crude-oil production is approximately 500 bbl.

Meanwhile, Socony-Vacuum, with the aid of the U. S. State Department, is pressing claims for its properties in the nationalized countries of Czechoslovakia, Poland and Yugoslavia.

Australia Prepares for End Of Wartime Marketing Pool

Marketing of individual brand-name products will be resumed by oil companies in Australia at the end of March with the termination of the wartime emergency pool arrangement.

The Australian industry has been preparing during the last year for the full resumption of individual marketing, but shortages of engineering equipment are said to be generally causing numerous problems, and a return of normal prewar trading conditions is expected to require considerable time.

R. R. Pugh, acting general manager of Commonwealth Oil Refineries, Ltd., commented that one of the many problems facing the industry is an acute shortage of sheet steel for 44-gal. drums. He pointed out authoritative estimates are that the over-all deficiency will be more than 500,000 drums when individual trading is resumed.

Commonwealth Oil Refineries, whose shares are held by the Australian Commonwealth Government and the Anglo-Iranian Oil Co., Ltd., operates one of Australia's present two refineries, a 2,500-bbl. daily skimming plant at Laverton, Victoria. The other refinery is the 5,000-bbl. daily plant of Shell Co. of Australia, Ltd., at Clyde, New South Wales.

Commonwealth Oil Refineries' recent annual report said preparatory work in connection with the projected expansion of the company's marketing operations is now well in hand, but added that shortages of manpower and materials may cause some delay in the construction program.

Tri-Pet. Corp. to Drill Test Near San Andres, Colombia

NEW YORK.—Around the first of April, Tri-Pet Corp.—jointly owned by Sinclair Oil Corp., Cities Service Oil Co. and Richfield Oil Corp. of California—expects to spud in near San Andres, about 75 miles south of Cartagena and 25 miles southwest of Sincelejo, in Colombia.

Tri-Pet (Companias Unidas de Petroleo) has a 50,000-hectare, (125,000 acres), concession on privately owned property. Other concessions have been applied for with a minimum of 50,000 hectares each, located mostly on the western seaboard north and south of Cartagena.

The drilling permit has been obtained and currently production equipment and other material is en route to the drilling site, which is north of Sinu Oil Co.'s operations at Floresanto. Sinu is jointly owned by Socony-Vacuum Oil Co., Inc., and the Tropical Oil Co., the latter a Standard Oil Co. (N. J.) affiliate.

Saudi Arabian Prince To Tour Oil Country

NEW YORK.—Before Amir Saud, crown prince of Saudi Arabia, leaves the United States he will be conducted on a cross-country tour of oil fields and refineries as a guest of Arabian American Oil Co. Gordon M. Sessions, wartime director of Petroleum Administration for War's public-relations division, will accompany the prince.

Since the war Sessions and Ludwig Caminita, who became PAW public-relations chief shortly after Sessions took over new duties with Petroleum Reserves Corp., joined forces and opened a public-relations organization in Washington. Currently Sessions and Caminita are retained by Arabian American.

James Terry Duce, vice president of Arabian American, and Floyd Ohliger, the company's general manager in Arabia, accompanied the prince on the first leg of the U. S. tour from Washington to New York.

Reports that the Arabian prince would meet with oil company officials, who are conducting negotiations to expand Arabian American's partnership, to discuss proceedings, were denied by a spokesman for Arabian American.

Royal Dutch Move Offices Back to The Netherlands

Main offices of Royal Dutch Petroleum Co. have been moved back to The Hague in The Netherlands after 7 years of war-enforced absence. In May 1940, with the invasion of the Low Countries by Germany, the company moved its offices to the Netherlands East Indies. With the Japanese invasion there in 1942, the company offices were transferred to Willemstad, Curacao, where they remained until the recent shift back to The Hague.

WASHINGTON WATCHING

BY HENRY D. RALPH

Opposition to Import Cuts

WASHINGTON. — The administration has made it plain that it intends to go through with its tariff-reduction bargaining with 18 foreign nations in spite of the protests being made by hundreds of domestic industries at current hearings and of growing opposition in Congress.

Many Republican members of the House and Senate have proposed legislation to repeal, modify, or suspend the Reciprocal Trade Agreements Act, to give business and agricultural interests a place in the actual negotiations, or to require that Congress give approval to the 18-nation bargain. However, it is generally expected that none of these proposals will be adopted before conclusion of the negotiations, scheduled for Geneva, Switzerland, this spring.

The Independent Petroleum Association of America was not the only group demanding that the Committee for Reciprocity Information make public its findings prior to the negotiations with the foreign nations. On the same day, before another one of the five hearings panels, a spokesman for textile manufacturers raised the point that the Administrative Procedures Act, passed last year, requires every government agency to base its actions only on evidence in a public record and to publish its findings, conclusions, and reasoning. However, the State Department takes the view that such facts and explanations need not be published until after the trade agreements have been signed, and there may be no way to get a court test of this issue before the negotiations.

Enlightening the Military

ABOUT 100 high ranking Army, Navy, and Marine officers attending the Industrial College of the Armed Forces attentively listened to an hour lecture on petroleum in war and between wars by Max W. Ball, director of the Oil and Gas Division of the Interior Department. The officers are taking a year's course in industrial mobilization, logistics, supply, and similar subjects designed to teach them that military supplies don't grow on trees, and Ball gave them a clear picture of the world's oil industry and the problems involved in obtaining an ample supply of petroleum products for war use. He also gave them plenty of reference material for their home-work.

The chief point made by Ball was that the most important factor in military supply is not just crude petroleum reserves in the ground but an active oil industry with plenty of know-how and an excess capacity.

Then the officers asked questions, and these followed just about the pattern that would be asked by the average civilian audience—Are we running out of oil? Wouldn't it be better to save our own oil and import foreign supplies during peacetime? Will synthetic fuels or atomic energy make petroleum obsolete? Does an "oil monopoly" restrict production? Do big oil companies buy up and supress patents which would make internal-combustion engines more efficient? Does the Continental Shelf hold much promise?

Ball's answers were the orthodox explanations of the geologists and the oil industry, but the observer was forced to conclude that many career officers would benefit from the industry's current public-relations program.

ILO's Oil Conference

IRONICALLY, the Oil Workers International Union (C.I.O.) probably will not be represented at the conference of the Petroleum Committee of the International Labor Organization to be held in Los Angeles, February 3-12.

This is due to the C.I.O. policy of cutting off its nose to spite its face. Some time ago it announced a boycott of the ILO because American Federation of Labor men got the best appointments. So when President Truman announces the United States delegation in a few days it is expected that the two labor delegates will be members of the International Union of Operating Engineers (A. F. of L.), which has only a small representation in the oil industry.

The two U. S. Government delegates, plus alternates and advisers, will be drawn from the State, Labor, and Interior departments, and it is expected that the employer delegates will be Charles E. Shaw of Standard Oil Co. (N. J.), and James C. Tanham of The Texas Co., both in charge of industrial relations of the foreign operations of their companies and both previously active in ILO and U. S. Government labor-relations work.

Twelve nations are expected to have delegations at the Los Angeles petroleum conference—United States, Canada, Colombia, Egypt, France, United Kingdom, Iran, Iraq, Mexico, Netherlands, Peru, and Venezuela.

Michigan-Wisconsin Case

THE Federal Power Commission has got itself into an embarrassing mess through its action on November 30 in voting 3 to 2, to award a certificate for construction of a new natural-gas pipe line to Detroit by the Michigan-Wisconsin Pipe Line Co.

In the first place, the certificate contained so many conditions and requirements that opponents charge it was not really a legal certificate but only notice of intention to issue a certificate if future findings and actions meet the specifications laid down. In the second place the commission has never published the majority and dissenting opinions which, presumably, would explain its findings and reasoning, and what the conditions really mean. It is not uncommon for the commission's opinion to be delayed a few days after an important order is issued, but a delay of 6 weeks is virtually unprecedented.

In the meantime, the city of Detroit and the Panhandle Eastern Pipe Line Co. which now serves the Michigan area filed petitions for rehearing and modification of the order granting a certificate to Michigan-Wisconsin. FPC denied these with the explanation that the 30-day period for such motions did not begin to run when the order was issued but will start only when the opinion is published. So these petitions will have to be refiled at a later time. But at the same time FPC did accept a reply from Michigan-Wisconsin accepting the terms of the certificate, so it would appear that different 30-day periods apply to different parties to the same case.

However, FPC itself reopened the case on January 15 for the single purpose of getting evidence on what rights Panhandle has to the Detroit market under the "grandfather clause" of the Natural Gas Act, since its line was there before the law was passed. At this hearing the commission got no evidence at all, for Panhandle's attorney merely stated that under the law it is entitled to the entire market and FPC has no authority to permit a competing line to enter the territory.

This was the nub of the entire case from the beginning. Some say the reopened hearing was for the pur-

pose of giving the three majority members some evidence to put into the opinion they are yet to write in substantiation of their November order. If so, the hearing didn't help them any.

The opinion in this case will be very important to all gas pipe-line companies because it is the first action bearing on the supposed exclusive right of an interstate pipe line to serve a single city. The long delay obviously indicates that all is not harmonious among the commissioners.

Revised FPC Rules

THE Federal Power Commission proposes to revise its practice rules to eliminate the need for a separate certificate of convenience and necessity for minor improvements and extensions of natural-gas pipe-line systems already under jurisdiction.

This action will be taken instead of defining service areas for each system as contemplated in 1942 amendment of the Natural Gas Act. FPC concluded it would be impractical to establish service areas but that something should be done to permit gas companies to do minor construction work without formal hearings and approval by the commission.

This conclusion was reached after analyzing testimony taken in the natural-gas investigation, and that portion of the staff report in Docket G-580 dealing with service areas has been circulated to interested parties. Comments on the proposal are requested by February 15.

The staff report does not propose the text of the new rule but outlines its intent in general terms.

Where a certificate already exists for operating a gas system, it is proposed to permit new construction without an additional certificate where (1) property changes, such as addition of scrubbers, do not increase the transmission capacity; (2) to give additional service to presently connected distributor or industrial customers, provided these additions do not increase the system capacity by more than 10 per cent in any calendar year; and (3) to provide additional minor connections along the line of the transmission company to serve farmers or villages, limited to a peak load of 50,000 cu. ft. per day for each new customer.

Intention to make such improvements would be filed 20 days in advance to keep FPC informed, and the commission would have the right to suspend the notice and institute formal certificate cases if desired.

Except for these specific exemptions, formal certificates would be required for all extensions to serve new customers, communities, or markets, even within a company's present marketing area, but the report says that under the commission's new rules of procedure uncontested cases will be handled more expeditiously than in the past. The new rule is advanced as an experiment which will not preclude subsequent consideration of other approaches to the determination of service areas, but the staff report concludes that the service area provision of the law is impractical to administer.

The report finds much justification in complaints of the gas industry over FPC delays and its requirement that formal consent be obtained for every change in a pipe-line system. Most witnesses in the investigation urged the adoption of service areas within which each company would be permitted to operate and expand as it desired without further FPC approval. Some witnesses admitted this would raise certain problems, and the staff report discovered additional ones.

The staff concluded that the service-area clause of the act must have an administrative rather than a geographical concept, and that its real intent is to free the companies of necessity for FPC approval of necessary minor construction but retain control over major changes and expansions.

Tideland Sovereignty

THE oil fields off the Southern California coast belong to the federal Government rather than the state because they are not under tidelands but under the marginal sea which is a creation of the United States in international law and never did belong to the 13 original states nor any subsequently admitted to the Union.

This is the chief point made by the Department of Justice in a 258-page brief filed in the Supreme Court in support of the Government's suit against the state of California for title to all the strip of ocean bottom between the low-tide mark and the 3-mile international limit.

The brief makes a studied distinction between the marginal sea and tidelands, inland waters, harbors, bays, rivers and reclaimed lands, and claims no federal title to any except the marginal sea. The Government thus seeks to quiet the alarm of inland states that this suit challenges their rights to submerged lands, and of coastal states that the Government may seize their piers, port works, and similar properties.

The long chain of Supreme Court decisions relied on by California to substantiate its claim to all submerged lands all deal, the brief declares, with inland or tidal waters, and make no reference to the marginal sea. The Government claims that all these decisions were erroneous and the federal Government should have been given title to such lands also, but it will not seek to have these decisions overturned or set aside. But, the brief says, this failure of the Government to assert or obtain its rights, and this false doctrine regarding such submerged lands should not be applied to the marginal sea which the Government now claims.

California's chief contention is that it owns out to the 3-mile limit because the 13 original states had such sovereignty and the Constitution provided that all subsequent states should enter the Union on an "equal footing." To combat this the Government contends that the 3-mile limit, nor any other, was not recognized by international law, nor claimed by the colonies, at the time the Constitution was adopted, and therefore the original states did not, and do not, have any rights to the marginal sea. Much of the brief is devoted to tracing the history of the 3-mile limit, contending that it became part of international law because of action taken by the United States in the early 1800's. Also, if sovereignty is an issue, the marginal sea is much more an attribute of national sovereignty than of state sovereignty.

Salvaging Canol

A PLAN for disposal of the Army's ill-fated Canol project has been agreed upon by the Canadian Government and the U. S. foreign-liquidation commissioner, and bids will be received until March 20 for any parts of the equipment anyone desires to purchase.

Not involved are the products pipe lines in the vicinity of Whitehorse, Canada, which are still in use. The rest of the project has been broken down into parcels and includes the Whitehorse refinery, tankage, powerhouse, shop, and auxiliary buildings and equipment; the 4 and 6-in. pipe line between Norman Wells and Whitehorse, including 10 pumping stations, road, telephone system, tanks, and equipment, and all construction equipment, houses and other buildings, and miscellaneous property.

All except some of the construction equipment is reported to be in good condition, but the report says it is doubtful that anyone will want to use the property in its present place, and the Canadian Government has agreed that no purchaser will be obliged to operate the project where it is. The U. S. Government has 2 years to sell the property, after which it may be abandoned, but at no time will the Canadian Government be responsible for its custody or condition. Purchasers using the equipment in Canada will not be required to pay Canadian import duties or other assessments on it, and there are no restrictions on its export from Canada. The Canadian Government has the right to purchase any lots of equipment it desires, or the U. S. Government may remove parts of the property without selling it.

Weather, Heavy Stocks Depress East Coast Burning Oils

PETROLEUM products markets remained generally strong early this week with the exception of a continued weakness in burning oils on the East Coast and some distress tank-car gasoline in the Mid-Continent area.

New York market sources reported No. 2 supplies ample and said "warm weather" is still depressing usual heavy winter movement. Prices for this principal burning-oil product have dropped up to 45 points along the East Coast.

The East Coast supply of kerosene also was adequate. Kerosene prices have dropped up to 30 points in the New York area.

The gasoline and residual fuel oil outlook on the East Coast, however, was brighter. Residual was described as tight with some observers expecting a price rise shortly. Demand for gasoline on the East Coast was relatively strong, paralleling the situation in the midwestern marketing area. Some New York suppliers said they are unable to build up normal inventories of motor fuel for summer consumption.

A few distress offerings of motor fuel in the Mid-Continent area were said to be originating in North and East Texas from suppliers without pipe-line outlets. Although gasoline demand is reported to be extremely heavy for this season, some smaller refiners were said to be making price concessions to move motor fuel produced as a result of high-level operations necessary to meet burning-oil demand.

The bulk of Mid-Continent and middlewestern gasoline continued to move at 7 to 7⅛ cents under contract arrangements and pipe-line gasoline was in heavy demand. One informed Mid-Continent marketer pointed out some of the distress tank-car motor fuel is recycle which lacks the "high jump" octane characteristics called for on the Gulf Coast.

In marked contrast to the situation on the East Coast burning oils moved at and above full market quotations in the interior. One refiner reported he was sold up through the remainder of the winter except for small quantities of No. 2 some of which he said was moving at 5⅛ cents—¼ cent over the market low. The only burning oil reported available in any appreciable quantity in the Mid-Continent was kerosene which suppliers were offering on a 42-44 basis.

No general crude-oil price increase had materialized as of early this week as a result of the action of Premier Oil & Refining Co. in raising, effective January 10, the East Texas crude price 10 cents to $1.80 a barrel—highest in the field's history.

Sun Oil Co. announced an increase of 5 cents per barrel in its posted prices for 13 fields in Southwest Texas. Fields covered by the increase are Blucher, Dan Sullivan, East Flores, Frost, Garcia, Gyp Hill, North Rincon, North Sun, Seeligson, Sun, Tijerina, Canales, and Weil. The company said the fields had been transferred from the Sweden schedule to a new Anahuac-Sweden listing, giving them the Anahuac prices. Sun also made initial posting of Kelsey Deep field in Southwest Texas with a top of $1.80 for 40° gravity and above. Sun's new schedule was effective 7 a.m., January 6.

DEATHS

Campbell N. Hunter, O. B. E., a leading petroleum technologist and president of Dallas Dome Wyoming Oilfields Co. as well as Hunter Valley Oil Co., Ltd., in Alberta, died December 23 in London. For many years Hunter was connected with British oil operations and at one time was a consultant in Russia. He also made frequent trips to Venezuela as a consultant.

Roy Watson, production foreman for The Texas Co., died January 11 in a train-automobile collision near Shreveport, La. Watson, employed by the company more than 30 years, lived at Plain Dealing, La.

Reese M. Hamilton, superintendent of Western Oil Field Corp., died January 13 at his home in Mexia, Tex.

Lon L. Hutchinson, 69, early-day consulting petroleum geologist, died January 13 in a Tulsa hospital. He once organized and served as president and general manager of Kanola Oil Co.

Samuel T. Miller, 69, engineer with Stanolind Pipe Line Co. before his retirement in 1940 after 30 years in the oil industry, died January 13 in a Tulsa hospital. His home was in Skiatook, Okla.

Otto H. Salyer, 54, died January 15 at Lubbock, Tex. Salyer had been with Pure Oil Co. 26 years, and at the time of his death was a drilling superintendent.

H. W. Hillebrandt, Sr., 41, assistant division operations superintendent for Lane-Wells Co., died January 15 in Houston.

Daniel A. Dean, refinery-construction engineer and a consultant on refinery-equipment design, died January 15 in Pittsburgh, Pa. He was associated with Vendome Tank Car Co., Tulsa.

Hal C. Moore, 65, former independent oil operator, died January 15 in a St. Louis, Mo., hospital. His home was in Evanston, Ind.

R. T. Lutz, 48, Wichita Falls, Tex., drilling contractor, was found dead January 15 on a lease in northwest Grayson County.

Arthur L. Bogan, 56, oil broker and secretary for several years of the old Marland Oil Co., Ponca City, Okla., died January 18 in Wichita, Kans.

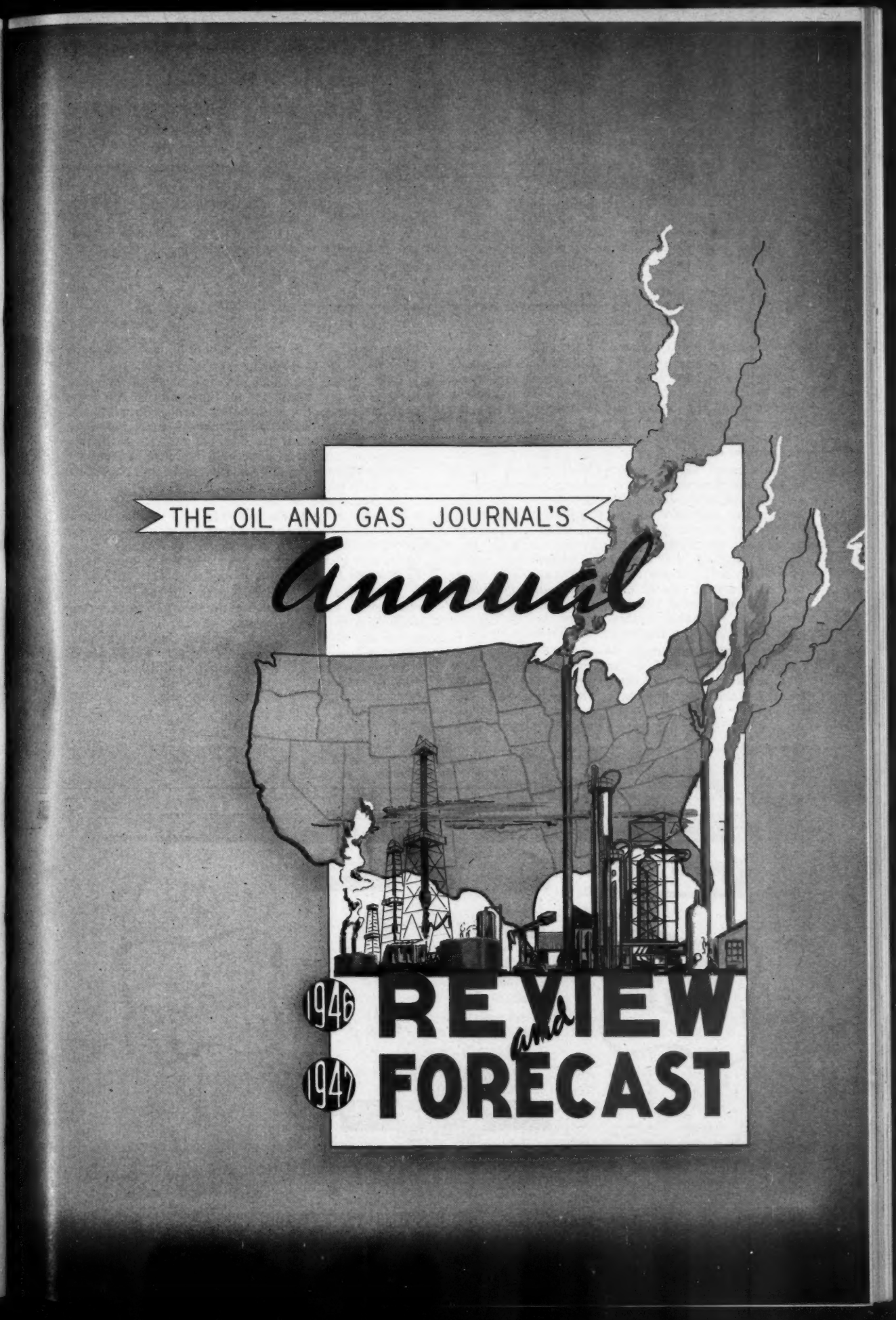
Michael M. Valerius, 75, petroleum engineer and geologist and one of the organizers of the American Association of Petroleum Geologists, died January 18 in Shreveport. Valerius, credited with the discovery of natural gas in what is now Hugoton field, closed his consulting office in Tulsa and retired from the oil business about 1935.

Claude B. Donovan, 43, drilling-equipment design engineer with Carter Oil Co., died January 18 at his home in Tulsa.

Ralph G. Trippett, 50, Shreveport, La., and Dallas, Tex., oil broker and an organizer, with Al Meadows, of General American Oil Co. of Texas, was found dead January 15 in his automobile in downtown Memphis, Tenn.

Index Ready Soon

The complete editorial index of The Oil and Gas Journal for 1946 is now in preparation and will soon be ready. Due to the continued shortage of paper, it will not be published in a regular issue. The complete index, enlarged and improved and with more cross-references, bound separately, will be sent without charge to all subscribers requesting a copy. Address requests to Circulation Department, P.O. Box 1260, Tulsa.


THE OIL AND GAS JOURNAL'S
Annual
1946 REVIEW and
1947 FORECAST

1947 Drilling Footage WILL

BY HERNDON DAVID

OVER 30,000 wells and nearly 107,000,000 ft. make up the drilling program the industry has scheduled for 1947, according to replies made by operators to The Oil and Gas Journal's questionnaires. Indicative of the trend toward deeper drilling, an increase over 1946 of only 2.8 per cent in the total number of wells scheduled, is accompanied by an increase of 10.1 per cent in the footage propected.

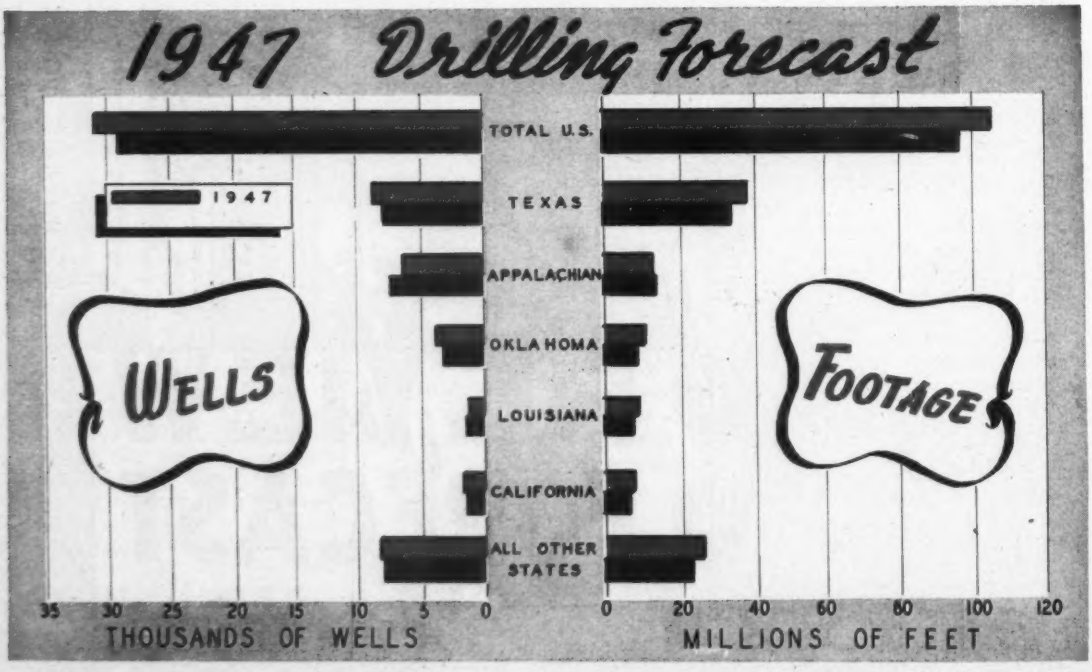
The current high demand for oil and the desire to increase reserves back of current production are reflected in a wildcat-well schedule that calls for an 11.4 per cent increase, to the highest number in history for 1 year. Development wells on the program total up to only a 1.2 per cent increase over 1946, indicating that the 1946 wildcatting results proved up only enough additional locations to maintain the current rate of drilling development wells. Events later in the year around some of the 1946 discoveries may change this picture, but this is the way it looks at the beginning of the calendar year.

Texas once more leads the procession, with over 8,600 wells in the 1947 drilling program, an increase of more than 800 wells compared to 1946. Here the trend toward deep drilling is clearly marked, with about 39,000,000 ft. on the schedule, an increase of 4,656,000 ft. over 1946.

West Texas operators plan a substantial increase, their program calling for an increment of 330 wells over last year, the gain being divided into 274 additional development wells and 56 more wildcats. Deep drilling to the pre-Permian formations in that area shows up in an estimated increase of 2,235,000 ft. to make up a grand total of a shade over 11,000,000 ft. of drilling for this year.

In Louisiana, a decrease in development wells scheduled in both the northern and southern parts of the state is not quite offset by a large increase in wildcatting activity. However, the greater average depth of the wildcat tests results in an increase in planned footage to be drilled of nearly 900,000 ft.

Oklahoma and Kansas are in the program for a substantial increase in the number of wells to be drilled, with a very heavy wildcat list for Oklahoma in addition to an increase in development wells; while Kansas operators expect to drill fewer wildcats but more than enough additional development wells to make up the difference. Oklahoma's heavy wildcat program, with its greater



DRILLING FORECAST

ESTABLISH ALL-TIME RECORD

average depth per well, will bring that state's footage to be drilled up to 11,200,000 ft., an increase of nearly 1,500,000.

Contrary to the impression in some circles that lease-expiration dates might result in a substantial increase in Illinois drilling this year, the replies from operators in that area indicate a sizable drop, both in development and wildcat drilling, and of course a corresponding drop in total footage. Acreage trading, and particularly farmout deals on favorable terms, may change this picture later in the year, but the plans of the operators at the beginning of the year, as indicated in their replies to questionnaires, do not seem to reflect any such trend.

Mississippi operators are planning a substantial increase in activity this year, according to their reports. The total number of wells on schedule is nearly double that drilled last year, and the heavy increase applied to both development and wildcat wells, despite the fact that 1946 wildcatting, on the surface, did not bring very good results.

California will see an intensified drilling up of proven locations in 1947 and a falling off in wildcatting, if operators carry out their present program. The net balance will be a substantial increase in the total number of wells and footage drilled.

Drilling Footage Programed for 1947

	1947 Program forecast				Change from 1946 actual			
State—	Field wells	Wildcat wells	Total wells	Total footage	Field wells	Wildcat wells	Total wells	Total footage
New York	1,235	0	1,235	1,770,000	—309	0	—309	—443,000
Pennsylvania	2,700	0	2,700	4,340,000	—884	0	—884	—1,442,000
West Virginia	1,145	0	1,145	3,120,000	+390	0	+390	+1,131,000
Ohio	1,375	20	1,395	3,570,000	+164	—44	+120	+168,000
Indiana	630	49	679	1,225,000	+166	—69	+97	+154,000
Illinois	1,390	520	1,910	4,830,000	—318	—115	—433	—1,095,000
Kentucky	528	92	620	1,035,000	—79	—15	—94	—140,000
Michigan	498	175	673	1,495,000	—43	—72	—115	—254,000
Kansas	1,910	232	2,142	6,920,000	+190	—75	+115	+364,000
Oklahoma	2,582	813	3,395	11,200,000	+105	+240	+345	+1,429,000
Texas	6,635	2,008	8,643	39,008,000	+422	+417	+839	+4,656,000
North Central	2,220	605	2,825	7,750,000	+120	0	+120	+685,000
West	1,830	280	2,110	11,050,000	+274	+56	+330	+2,235,000
Panhandle	478	13	491	1,558,000	+173	+8	+181	+615,000
Eastern	502	225	727	4,000,000	—71	+11	+40	+208,000
Gulf Coast	1,185	656	1,841	12,312,000	—159	+281	+122	+713,000
Southwest	420	229	649	2,338,000	+85	—39	+46	+200,000
Louisiana	1,008	363	1,371	9,330,000	—122	+109	—13	+866,000
Northern	533	170	703	3,150,000	—153	+56	—97	—25,000
Southern	475	193	668	6,180,000	+31	+53	+84	+891,000
Arkansas	125	77	202	810,000	—8	+27	+19	+82,000
Mississippi	348	142	490	3,990,000	+167	+63	+230	+2,019,000
Alabama	7	17	24	156,000	+2	+6	+8	+84,000
Georgia	0	5	5	25,000	+0	+3	+3	+17,000
Florida	3	21	24	182,000	+1	—3	—2	+16,000
Montana	266	61	327	710,000	0	+14	+14	+49,000
Wyoming	182	81	263	1,200,000	+68	+27	+95	+484,000
Colorado	134	30	164	1,065,000	—12	+9	—3	+10,000
New Mexico	514	83	597	2,550,000	+147	+39	+186	+927,000
California	1,780	214	1,994	8,250,000	+250	—46	+204	+741,000
Utah	0	5	5	30,000	—1	+2	+1	+21,000
Miscellaneous	11	27	38	90,000	0	0	0	0
Total U. S. 1947 forecast	25,006	5,035	30,041	106,891,000	+296	+517	+813	+9,844,000
Total U. S. 1946 actual	24,710	4,518	29,228	97,047,000				

29,000 Wells DRILLED IN

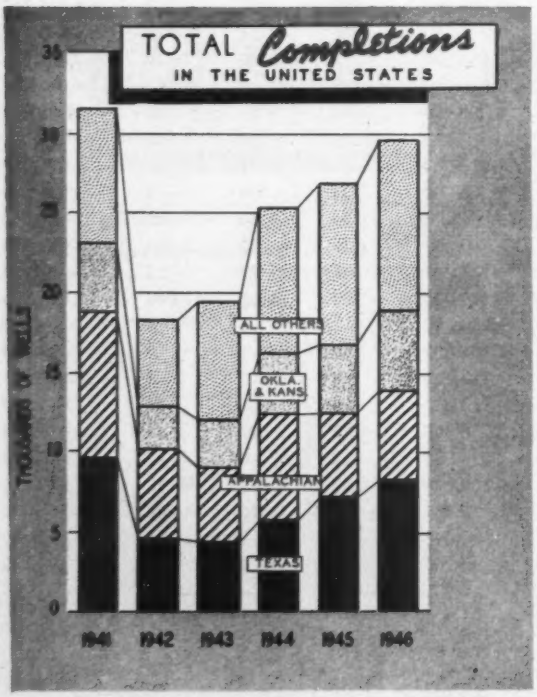
DESPITE postwar maladjustments, well completions in the United States totaled 29,228 during 1946, the highest number completed in any year since 1941 and an increase of 8.7 per cent over 1945. This total represented 24,710 development wells and 4,518 wildcats. Of the development wells, 15,216 were oil wells, 2,963 were gas wells, and 6,531 were dry. The dry holes, however, included 2,237 service wells. Of the wildcats, 635 were oil wells, 127 were gas wells, and 3,756 were dry.

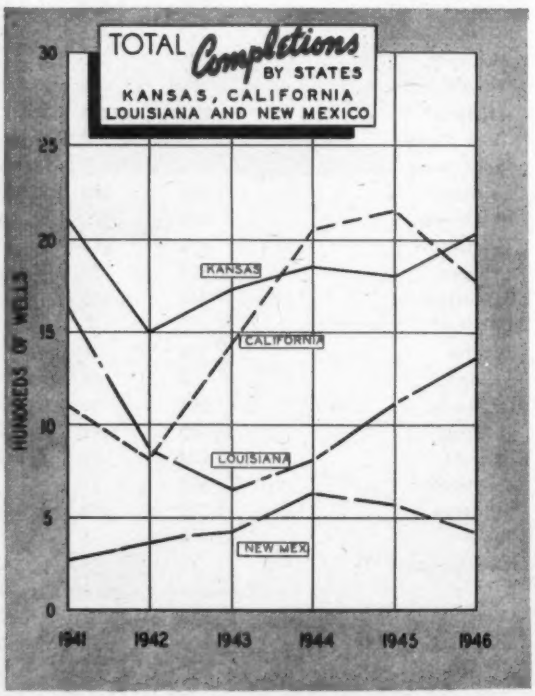
Texas continued to set the pace for drilling operations with a total of 7,804 wells, consisting of 4,720 oil wells, 499 gas wells, and 2,585 dry holes. This compared with 3,808 oil wells, 670 gas wells, and 1,165 dry holes in 1945. Pennsylvania placed second with 3,584 total completions, a decrease of 58 from the previous year, while Oklahoma was third with 3,050 wells, an increase of 529 over last year. Illinois showed an increase of 625 in the number of completions to place fourth, and Kansas was fifth with an increase of 231. California, which occupied sixth place, showed a decrease of 360 wells from the 1945 total of 2,150. Louisiana dropped to eighth place in number of wells drilled, showing an increase of 276 over last year's total.

The North Central Texas area dominated drilling in that state, accounting for 2,705 of the total completions, an increase of 458 over the number in that region in 1945. The principal reason for this area's dominance of the state's activity is the fact that it is a shallow area and was not nearly as handicapped by shortage of materials as were the deeper areas.

West Texas contributed substantially to the state's activity with a total of 1,780 completions. Development completions constituted the main oil work during 1946, and drilling was approximately on the same plane as the previous year. This condition was primarily due to the shortage of high-tensile-strength tubing and casing so necessary to the deep drilling required in the area. While these materials are not yet available in sufficient quantity to enable operators to plan definite drilling campaigns, the outlook for 1947 is for a continued increase in drilling with emphasis on the development of Ellenburger production in Andrews, Winkler, and Ector counties together with deepening campaigns that will extend into southeastern New Mexico.

The Gulf Coast area of Texas placed third in number of wells drilled in that state with 1,719 completions. This area, together with the Gulf Coast region of Louisiana, is assuming a more and more prominent position in the considerations of the oil industry. Many large deep fields have been devel-





1946 DESPITE POSTWAR MALADJUSTMENTS

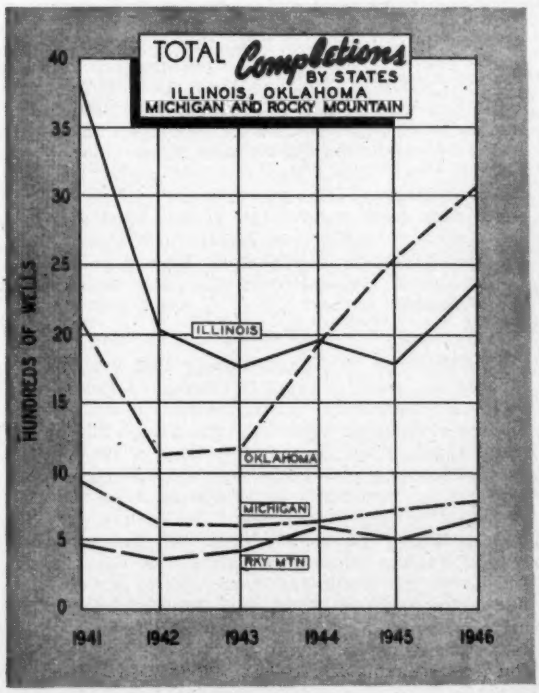
WILDCAT COMPLETIONS BY STATES

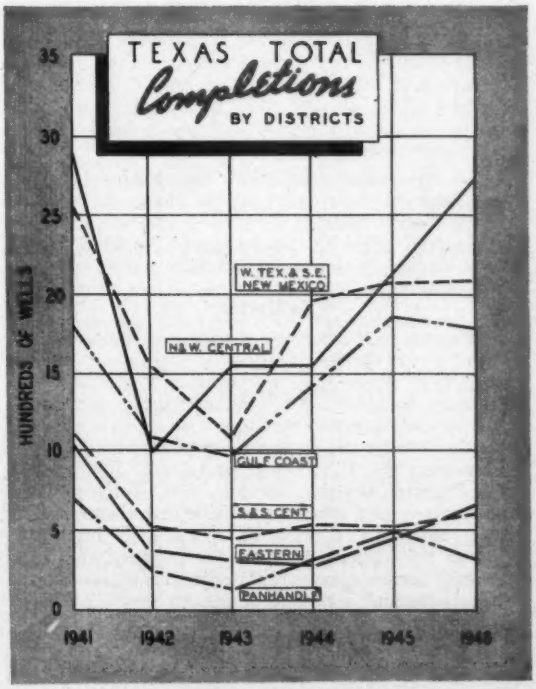
	Comp.	Oil	Gas	Dry
Ohio	64	4	18	42
Indiana	118	17	2	99
Illinois	635	96	4	535
Kentucky, Western	107	17	2	88
Michigan	247	16	6	225
Kansas	307	31	5	271
Neb., Mo., Iowa	14	0	0	14
Oklahoma	573	92	38	443
Texas	1,591	247	34	1,310
North Central	605	76	4	525
West	224	49	1	174
Panhandle	5	0	0	5
Eastern	114	20	4	90
Gulf Coast	375	79	15	281
Southwest	268	23	10	235
Louisiana	254	61	7	186
Northern	114	9	3	103
Southern	140	52	4	84
Arkansas	50	9	0	41
Mississippi	79	2	1	76
Alabama	11	0	0	11
Georgia	2	0	0	2
Florida	24	0	0	24
Montana	47	11	4	32
Wyoming	54	13	3	38
Colorado	21	4	0	17
Utah	3	1	0	2
New Mexico	44	4	0	40
California	260	10	3	247
Arizona	2	0	0	2
Oregon	2	0	0	2
Tennessee	4	0	0	4
South Dakota	3	0	0	3
Washington	1	0	0	1
North Carolina	1	0	0	1
Total United States	4,518	635	127	3,756
Total 1945	4,256	548	127	3,581

DEVELOPMENT COMPLETIONS BY STATES

	Comp.	Oil	Gas	Dry
New York	1,544	795	8	741
Pennsylvania	3,584	1,821	271	1,492
West Virginia	755	98	535	122
Ohio	1,211	326	525	360
Indiana	464	313	23	128
Illinois	1,708	1,248	2	458
Kentucky	607	282	137	188
Michigan	541	218	101	222
Kansas	1,720	1,024	295	401
Neb., Mo., Iowa	4	3	0	1
Oklahoma	2,477	1,562	303	612
Texas	6,213	4,473	465	1,275
North Central	2,100	1,322	34	744
West	1,556	1,413	17	126
Panhandle	305	149	121	35
Eastern	573	365	145	63
Gulf Coast	1,344	1,021	122	201
Southwest	335	203	26	106
Louisiana	1,130	752	108	270
Northern	686	441	99	146
Southern	444	311	9	124
Arkansas	133	101	2	30
Mississippi	181	152	5	24
Alabama	5	3	0	2
Florida	2	2	0	0
Montana	266	148	67	51
Wyoming	114	96	8	10
Colorado	146	144	1	1
Utah	1	0	0	1
New Mexico	367	290	42	35
California	1,530	1,365	62	103
South Dakota	6	0	3	3
Tennessee	1	0	0	1
Total United States	24,710	15,216	2,963	*6,531

*Includes 2,237 service wells.





oped in this area and in the opinion of many prominent geologists, the world's greatest oil reserves will be found under the waters of the Gulf of Mexico. Several offshore wells are under way at the present time, at least one of them 5 miles out in the Gulf, and it is anticipated that both the number of offshore wells and their distance from land will increase substantially during the coming year.

Drilling in southwest Texas during 1946 apparently has connected a huge area in Jim Wells, Nueces, Kleberg, and Brooks counties, including the area previously thought of as several separate fields, into one huge field 50 to 55 miles long by 3 to 7 miles wide and ranking second only to the East Texas field in estimated reserves. The various fields included in this combined area accounted for the majority of development drilling in 1946, and will probably continue to account for the greater portion of the 1947 drilling.

TOTAL UNITED STATES COMPLETIONS BY STATES

State—	Total comp.	Oil	Gas	Dry	Service	Average footage	Total comp. 1945
New York	1,544	795	8	6	735	1,433	1,423
Pennsylvania	3,584	1,821	271	72	1,420	1,613	3,642
West Virginia	755	98	535	122	0	2,735	806
Ohio	1,275	330	543	402	0	2,669	1,014
Indiana	582	330	25	227	0	1,838	305
Illinois	2,343	1,344	6	991	2	2,529	1,749
Kentucky	714	299	139	275	1	1,625	737
Michigan	788	234	107	441	6	2,219	770
Kansas	2,027	1,055	300	657	15	3,234	1,796
Neb., Mo., Iowa	18	3	0	15	0	1,980	32
Oklahoma	3,050	1,654	341	1,001	54	3,204	2,521
Texas	7,804	4,720	499	2,582	3	4,402	7,195
North Central	2,705	1,398	38	1,266	3	2,612	2,247
West	1,780	1,462	18	300	0	4,952	1,740
Panhandle	310	149	121	40	0	3,043	531
Eastern	687	385	149	153	0	5,519	401
Gulf Coast	1,719	1,100	137	482	0	6,747	1,721
Southwest	603	226	36	341	0	3,546	555
Louisiana	1,384	813	115	455	1	6,116	1,108
Northern	800	450	102	247	1	3,969	493
Southern	584	363	13	208	0	9,057	615
Arkansas	183	110	2	71	0	3,979	185
Mississippi	260	154	0	100	0	7,581	362
Alabama	16	3	0	13	0	4,529	37
Georgia	2	0	0	2	0	4,221	2
Florida	26	2	0	24	0	6,368	18
Montana	313	159	71	83	0	2,111	312
Wyoming	168	109	11	48	0	4,261	227
Colorado	167	148	1	18	0	6,318	60
Utah	4	1	0	3	0	2,139	1
New Mexico	411	294	42	75	0	3,951	424
California	1,790	1,375	65	350	0	4,195	2,150
Arizona	2	0	0	2	0	3,129	0
Oregon	2	0	0	2	0	8,543	0
Tennessee	5	0	0	5	0	1,424	1
South Dakota	9	0	3	6	0	1,730	1
Washington	1	0	0	1	0	6,230	0
North Carolina	1	0	0	1	0	10,054	0
Total 1946	29,228	15,851	3,090	8,050	2,237	3,321	28,879
Total 1945	28,879	14,297	2,899	7,471	2,212	3,469	.....
Total 1944	25,262	13,029	3,067	*9,166	.....	3,234	.....
Total 1943	19,477	9,717	1,897	*7,863	.....	3,250	.....
Total 1942	16,150	8,501	2,089	*7,560	.....	3,158	.....
Total 1941	32,140	19,761	3,014	*9,365	.....	3,085	.....

*Includes service wells.

Oklahoma

Oklahoma activity during 1946 was featured by a rapid oil play in Cotton County in the southern part of the state. This play started in April with a chance discovery and developed to proportions reminiscent of old-time oil booms. Five oil fields were found and developed during the latter 6 months of the year and have attained a combined production of nearly 9,000 bbl. daily at the present time. Drilling in this county alone added approximately 395 wells to the state's total completions.

Also considered important was exploratory and development activity carried on along the Garvin-McLain county trend. This area is located along the northeastern edge of the Anadarko basin and contains Oklahoma's deepest producing fields.

California

Although well-informed prospectors believe there will be a substantial decline in California drilling during 1947, there does not appear to be any substantiation for this belief. Present indications point to the probability that not less than 1,500 wells will be drilled during the forthcoming year. This is slightly less than the 1,790 wells completed during 1946. Only Cymric, Orcutt, Lompoc, Cat Canyon, Ventura Avenue, and San Miguelito can be expected to sustain additional drilling at a relatively high rate, although the urgent demand for production during 1947 will prove a powerful incentive to do all the drilling possible in proved fields.

Illinois

Illinois showed a decided increase in drilling operations during the past year, this being principally due to the development of the prolific Mattoon field in Coles County. This one field accounted for the drilling of nearly 400 wells. Continued expansion of the Clay City field in Clay and Wayne counties also added a large number of wells to the completion list. Several other fields also received active development campaigns, although they did not match the work done in the above two fields. Most active of the secondary fields were Herald in White County, Ingraham West in Clay County, Marine in Madison County, and Stokes-Brownsville and Concord in White County.

Kansas

Development in Kansas during 1946 was distributed among many previously discovered fields, none of the new discoveries being responsible for unusual drilling campaigns. Emphasis was placed on the extreme western and southern portions of the state in the wildcatting operations and several discoveries made in the past few months appear to be the most important strikes of the year. The outlook for 1947 appears to be about on a level with the past year, with the older areas dominating the development work and the south and west central areas dominating the exploratory drilling. Continued expansion and development of the Hugoton gas field will also contribute substantially to the activity according to the present outlook.

U. S. Drilling Depth Records by States

State—	Well and location	Year	Formation	Footage
California	Pacific Western Oil 1 National Royalties, 5-28s-22e, Kern, Co.	1946	.....	16,689
Upper Gulf Texas	Phillips Pet. 3 Schoeps, Millican Salt Dome area, Brazos Co.	1945	Cretaceous	16,655
Mississippi	Superior Oil 1 Cassie Bradford, 1-3n-13w, Forrest Co.	1946	.....	15,730
South Texas	Quintana Pet. 3-D So. Texas Syndicate, McMullen Co.	1945	Cretaceous	15,301
West Texas	Phillips Pet. 1 Price, T.C. Railway Sur., Pecos Co.	1944	Ellenburger	15,279
South Louisiana	Shell Oil 2 Smith-State Unit 1, Weeks Island, Iberia Parish	1946	Miocene	14,301
Lower Gulf Texas	Union Prod. 1 Brown, Agua Dulce field, Nueces Co.	1939	Yegua	13,728
Florida	Humble Oil & Ref. 2 Gulf Coast Realty, Sunniland field, Collier	1944	Lime	13,512
North Louisiana	Mountain Fuel Supply-Union Pac. 1 Govt., 8-16n-112w, Uinta Co.	1942	Smackover	12,952
Wyoming	Union Prod. 1 McDonald Unit, No. Lisbon field, Claiborne Parish	1946	Lakota	12,894
Colorado	Texas Co.-Calif. Co. 20 Unit, 34-3n-94w, Wilson Creek, Rio Blanco	1946	Madison	12,702
Alabama	Union Prod. 1 Waite, 27-8n-1e, Clarke Co.	1941	Jurassic	12,389
East Texas Border	Humble Oil & Ref. 1 Pickering Lbr. Co., Shelby Co.	1946	Jurassic	12,221
Arkansas	Union Prod. Co. E-1 Crossett Lbr. Co., 12-19s-7w, Ashley Co.	1944	Eagle Mills	11,137
South Central Texas	Quintana Pet. 3-A Washburn, Washburn field, La Salle Co.	1942	Edwards	11,042
Michigan	Gulf Ref. 1 Bateson, Kawkawlin field, Bay Co.	1946	.....	10,447
North Dakota	California Co. 1 Kamp, 3-154n-96w, Williams Co.	1938	Devonian	10,281
Montana	Carter Oil-Phillips 1 Weazelhead, 28-34n-12w, Milk River, Glacier	1946	Madison	10,102
Pennsylvania	Manufacturers Light & Heat 1 Hockenberry, Mercer Twp., Butler	1944	Cambrian	10,096
North Carolina	Standard Oil of N. J. 1 Hatteras Light, Dare Co.	1946	Granite	10,054
West Virginia	Hope Natural Gas 8517 Gribble, Grant dist., Harrison Co.	1941	Queenston	10,018
East Texas	Lone Star Prod. 1 Buckalen, Adrian Anglin Sur., Henderson Co.	1946	.....	9,500
New Mexico	Southern Union Prod. 17 Barker Creek, 27-32n-14w, San Juan Co.	1946	Paradox	9,303
Oregon	Texas Co. 1 Cooper Mountain, 25-1s-2w, Washington Co.	1946	Volcanics	9,263
North Central Texas	Standard Oil of Texas 2 Beasley, John McKerley Sur., Cooke Co.	1946	.....	9,164
New York	New Penn Dev. 1 Herrington, Woodhull Twp., Steuben Co.	1944	Oswego	8,625
Texas Panhandle	Sinclair Prairie Oil 1 Henderson, H.&G.N. Railway 16, Block A-8	1945	Conglomerate	8,502
Maryland	Standard Oil of N. J. 1 Maryland Esso, Worcester Co.	1946	.....	8,000
South Dakota	Northern Ordnance 1 Harding School Land, 1-17n-1e, Harding Co.	1943	St. Peter	8,000
Kansas	Stanolind Oil & Gas 1 Adams, Adams Ranch field, Meade Co.	1945	Arbuckle	7,921
Ohio	Penn-Ohio 1-C Knowlton, Sec. 10, Independence Twp., Washington	1933	Clinton	7,889
Georgia	Mount Warren-Robinson 1 Chandler, Land Dist. 25, Early Co.	1944	Granite	7,320
Illinois	Pure Oil 3 Billington, 26-1n-7e, Wayne Co.	1940	St. Peter	7,207
Nebraska	Union Oil of Calif. 15 Agate, Sioux Co.	1938	Penn.	6,846
Utah	Mountain Fuel Supply 2, 21-3n-24e, Clay Basin field, Daggett Co.	1935	Jurassic	6,799
Washington	Ohio Oil 1 Robinson, Gray's Harbor Co.	1932	.....	6,725
Arizona	Funk et al 1 San Simon, 27-13s-30e, Cochise Co.	1941	Volcanics	6,668
Indiana	Continental Oil 1 Cooper Est., 13-3s-14w, Wabash Twp., Gibson Co.	1946	Trenton	6,200
Kentucky	California Co. 1 Spears, 13-L-57, Lincoln Co.	1946	Rhyolite	6,117
Iowa	Oil Development 1 Wilson, Page Co.	1930	Cambrian	5,305
New Jersey	W. & K. Oil 1 Mathews, Jackson Mills, Ocean Co.	1925	Wissahickon	5,022
Missouri	Strake Pet. 1 Russell, Pemiscot Co.	1941	Cambrian	4,740
Tennessee	Sequatchie Gas 1 Sewanee Fuel & Iron Co., Grundy Co.	1932	Knox	4,235
Idaho	Ohio Oil 1 Berry Tr., 5-9n-4w, Crystal Dome field, Fayette Co.	1931	.....	4,011
Nevada	Red Star Oil 2 Nelson, 20-22s-60e, Arden anticline, Clark Co.	1945	.....	3,767

U. S. Producing Depth Records by States

State—	Well and location	Year	Formation	Producing footage
South Louisiana	Shell Oil 2 Smith-State Unit 1, Weeks Island, Iberia Parish	1946	Miocene	13,778
California	Continental Oil A-2 Kern Co. Land Co., 8-27s-24e, Wasco, Kern Co.	1938	Miocene	13,096
Wyoming	Mountain Fuel Supply-Union Pac. 1 Govt., 8-16n-112w, Uinta Co.	1946	Lakota	12,894
Upper Gulf Texas	Superior Oil 1 So. Texas Dev. C-9, Lake Creek, Montgomery Co.	1943	Wilcox	11,805
Florida	Humble Oil & Ref. 1 Gulf Coast Realty, Sunniland, Collier Co.	1943	Glen Rose	*11,626
West Texas	Amerada Pet. 1-A Jones, Jones Ranch discovery, Gaines Co.	1945	Devonian	*11,422
Lower Gulf Texas	Sun Oil 1 Thompson, West Goliad discovery, Goliad Co.	1945	Wilcox	11,149
Oklahoma	Cities Service Oil 1 Lawson, North Lindsey field, McClain Co.	1945	Ordovician	*10,995
North Louisiana	Cotton Valley Operators 1 Gray, Cotton Valley, Webster Parish	1945	Cotton Valley	*10,681
Mississippi	California Co. 1 Douglas, Mallalieu field, Lincoln Co.	1944	Massive	*10,560
Arkansas	Tide Water-Seaboard Oil 1 Bandow, Patton field, Lafayette Co.	1942	Smackover	*9,330
Northwest New Mexico	Southern Union Prod. 17 Barker Creek, 27-32n-14w, San Juan Co.	1946	Paradox	9,303
North Central Texas	Standard of Texas 2 Beasley, John McKerley Sur., Cooke Co.	1946	Ellenburger	8,940
South Central Texas	Quintana Pet. 1 Muil, Muil field discovery, Atascosa Co.	1946	Edwards	8,870
East Texas	Lone Star Prod. 1 Buckalen, Adrian Anglin Sur., Henderson Co.	1946	Rodessa	8,853
West Virginia	Ohio Oil 1 Kuykendall et al, Dry Fork dist., Tucker Co.	1946	Oriskany	*8,410
Michigan	Gulf Ref. 1 Bateson, 2-14n-4e, Bay Co.	1941	Salina	*7,850
East Texas Border	Magnolia Pet. 1 Orr, Fowler Sur., Lassater field dis., Marion Co.	1946	Travis Peak	7,577
Pennsylvania	Manufacturers Light & Heat 6 Barton Est., Summit, Fayette Co.	1946	Onondaga	*7,495
Colorado	Texas Co.-Calif. Co. 10 Unit, 26-3n-94w, Wilson Creek, Rio Blanco	1941	Morrison	7,198
South Texas	Jones 2-C Exxell, San Caja field, McMullen Co.	1944	Wilcox	6,922
Montana	Montana-Dakota Utilities 1 Unit, 17-4n-62e, Cedar Creek, Fallon	1936	Madison	6,767
Kansas	Olson Drlg. 3 Morrison, Morrison field, Clark Co.	1936	Viola	*6,485
Ohio	East Ohio Gas 2 Phillips, Sec. 23, Washington Twp., Harrison Co.	1941	Clinton	5,820
New York	Kane 1 Lewis, West Union Twp., Steuben Co.	1942	Oriskany	5,222
Illinois	Kingwood Oil 24-A Shanafelt, 20-2n-2e, Salem field, Marion Co.	1943	Trenton	4,657
Kentucky	Columbian Fuel 1 Semet-Solvay Coal Co., Pike Co.	....	Devonian	*4,523
Texas Panhandle	Canadian River Gas 9-A Bivens, Hartley Co.	1929	Permian	*3,830
Alabama	Hunt Oil 4 Land, Gilbertown field, Choctaw Co.	1945	Eutaw	*3,624
Nebraska	Skelly Oil 1 Wiltse, Dawson field, Richardson Co.	1942	Hunton	*2,900
Indiana	Carter Oil 1 Skiles, 15-8s-15w, Point Twp., Posey Co.	1943	McClosky	2,909
Tennessee	Harbor Oil 1 Sells, Pickett Co.	1920	Knox	*1,607
Missouri	Cities Service Oil 1 Cook, Tarkio field, Atchison Co.	1940	Bartlesville	*1,444

*Total depth figures.

Depth Trends SHOWED

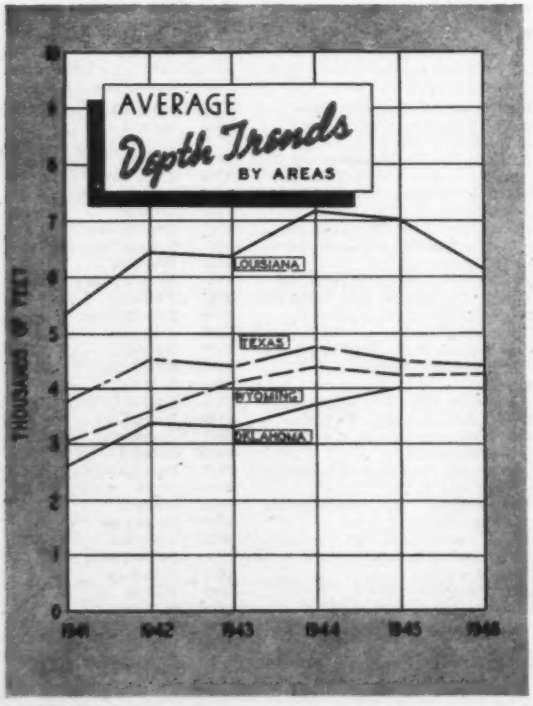
THE total footage drilled in the search for and development of oil and gas fields during 1946 showed an increase of 6.5 per cent over that drilled the previous year despite the handicaps of material shortages. The total footage drilled was 97,068,000 ft., a record exceeded only by the 1941 total of 98,509,000 ft. Average footage of all the wells completed, however, was only 3,321 ft. for 1946 as compared to 3,469 ft. for 1945.

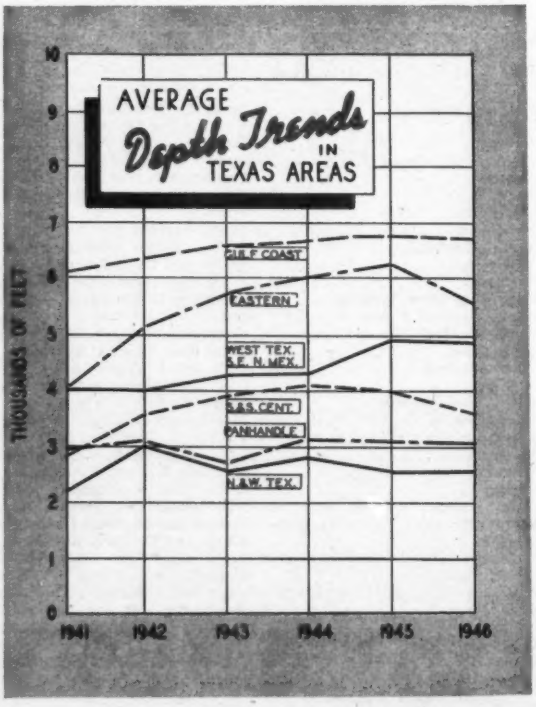
Most of the major oil-producing states showed a decrease in average during 1946 in contrast to the steadily increasing trends which most of them have established during the past few years. There are two apparent explanations for this fact. In the first place, many of the fields discovered during the war years were developed on a 40-acre-spacing basis due to wartime restrictions on drilling operations. These restrictions were lifted late in 1945, and many operators, desirous of developing these previously discovered fields efficiently so as to obtain the greatest ultimate yield, undertook a development program on either a 10 or 20-acre basis in the shallower fields. This resulted in a greater number of completions than in previous years and a greater total footage drilled, but the average footage dropped off because of the increased shallow development.

Secondly, in the frenzy of the search for large oil fields during the war, many of the less-favorable shallow areas were disregarded. Faced with a material shortage, many operators had old equipment on hand which would operate successfully in the shallow areas but which would not stand the excessive loads imposed by deep drilling. The only manner in which this equipment could be kept busy until new deep-drilling equipment could be obtained, therefore, was in a reworking of the less-favorable areas in an attempt to fill in the spots previously overlooked. This reworking was a major factor in the decrease of average depth of completed wells.

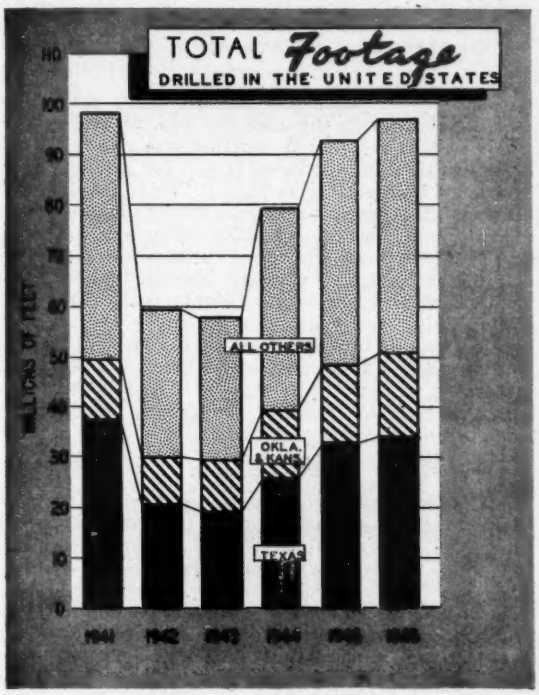
Deeper Drilling in Prospect

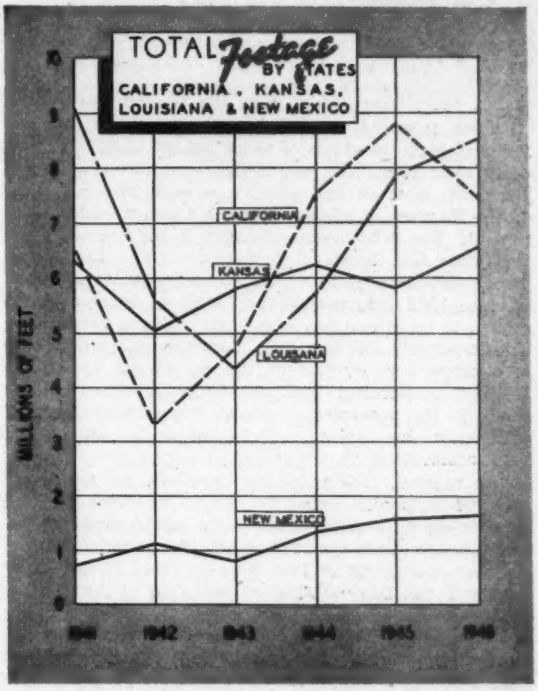
Despite the reversed trends in average footage shown in most of the major states, many key deep wildcats were drilled in 1946 which will lead to even deeper drilling in the future. Several of these resulted in the establishment of new state depth records and one, Pacific-Western Oil Corp. 1 National Royalties, Kern County, California, shattered the world depth record by drilling to a total depth of 16,669 ft. This well is now in the process of fishing stuck drill pipe, and operators are considering carrying it even deeper if possible. Another well now below 16,000 ft. in Caddo County, Oklahoma, the Superior Oil Co. 51-11 Weller, may soon pass the California record and provide valuable information as to the possibilities of oil production from the deep portion of the Anadarko basin as well as valuable engineering data for future use in design of deep-drilling equipment.

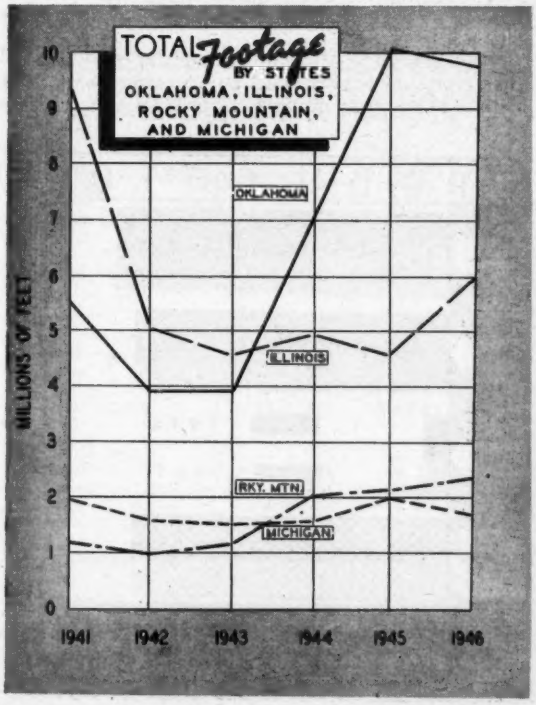


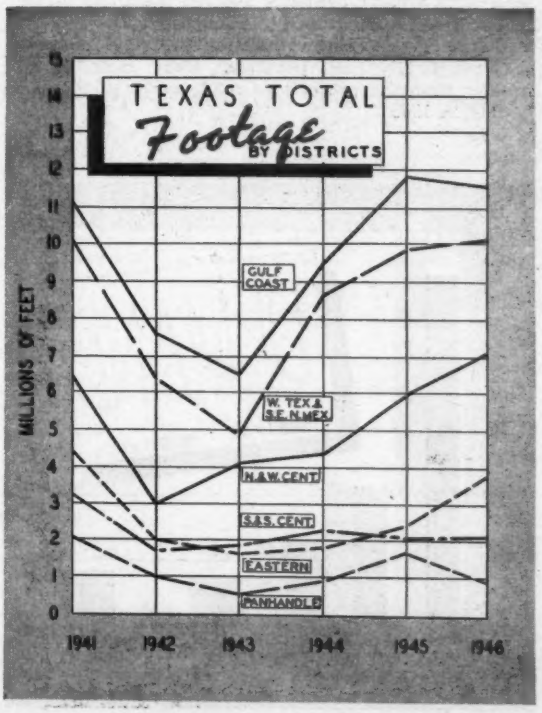


WIDE VARIATION BY DISTRICTS









1947 U.S. Demand WILL

THE petroleum industry in the United States can look forward in 1947 to an increase in demand for petroleum products of from 142,000 to 227,300 bbl. daily over 1946. The larger figure, amounting to 4.3 per cent, is from the petroleum economics division of the Bureau of Mines, and the smaller estimate is that of the economics advisory committee of the Interstate Oil Compact Commission. The Bureau of Mines' estimate of this year's requirements is based on late 1946 information and will be revised from month to month to conform with changed conditions. The Interstate Oil Compact Commission's committee is composed of several of the petroleum industry's leading economists and quarterly reports will be made to the commission which will incorporate revisions in the preliminary estimates for the entire year announced in December.

As regards 1947 probable demands for crude oil and products and estimates for all of 1946, the two reports do not differ materially as to conclusions. In both reports it was necessary to estimate the last quarter operations of 1946 because final data for the year will not be available until March or April.

It should be stated here that there are other economists in the petroleum industry who were not connected with either investigation who believe that the estimated needs of 1947 as projected by the industry and government groups are on the conservative side, with greater demands assured assuming an expanding national economy throughout the year. It is pointed out in this connection that 1946 demands for practically all products were substantially greater than the projections made early in the year or late in 1945.

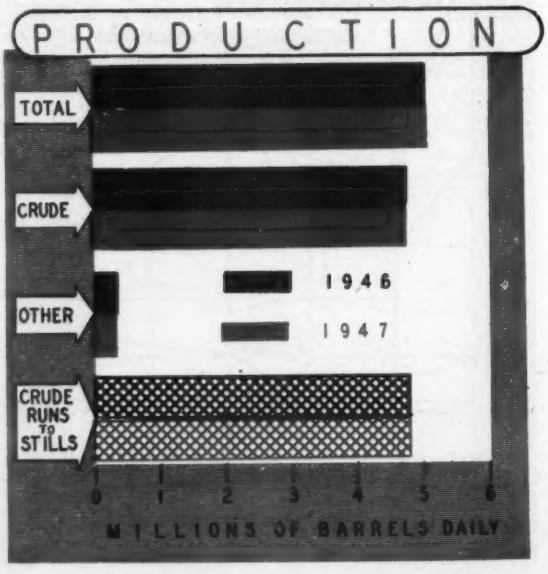
Gasoline requirements in 1946 were practically the same as during the peak war year of 1945 despite the fact that new-car production was nearly 50 per cent less than the predicted output for 1946 on which gasoline estimates were based. This development reflects the substantial increase in per-unit consumption of cars, trucks, and other motor vehicles.

The 1946 demands for distillate, kerosene, and all the intermediate products exceeded expectation and established new yearly records. Sales of residual oil in 1946 were slightly under the preceding war year. This was brought about by the large decline in military and war-production demands and delays in returning to normal peacetime conditions. There was also the fact that more of the marine demand was supplied outside this country in 1946.

1947 Demands

The 1947 forecast for petroleum domestic requirements assumes a continuance of the trends apparent since the close of World War II. The production of at least 5 million new motor vehicles in 1947—a prediction of 1946 which failed to materialize—is the basis for expected greater gasoline consumption. Unsatisfactory labor conditions in the coal industry have brought tens of thousands of new customers to the petroleum industry, with additional important shifts from coal to oil assured during the coming year. Burning-oil consumption trends will continue upward this year. A record demand for lubricating oils is in prospect.

The Bureau of Mines projection for 1947 assumes that crude-oil exports will be the same as in 1946, with a 10 per cent decrease in product exports. This



EXCEED 1946 RECORD REQUIREMENTS

is not due to a decline in demands outside the United States, where the percentage gain in consumption will be greater than in the United States according to estimates of those familiar with international petroleum conditions.

Variations in 1947 estimates of supply in the two projections as shown in the accompanying table are greater than in the case of demand. This is largely because of the differences in evaluating inventory conditions. The Bureau of Mines explains that its "forecast contains no recommendations as to desirable rates of crude production or of changes in crude stocks, but is an estimate of probable requirements based on actual trends in the demand for all products and adjustments for seasonal changes in refinery stocks."

With this background as to objectives the Bureau of Mines estimates that the production of crude oil in 1947 will be slightly greater (0.9 per cent) than it was in 1946 with a 6.6 per cent increase in natural gasoline and associated products, or a total gain of 1.2 per cent. The government agency projects a 2.1 per cent increase in crude-oil imports which will be offset with 4.3 per cent decline in imports of products. This program assumes some reduction in stocks of refinery inventories from the highs established during the past year.

In the case of the economics advisory committee of the Interstate Oil Compact Commission, 1947 domestic operations and imports are projected in the belief that the stock accumulations of 1946 of approximately 54,000,000 bbl. were too large in the case of certain products and that 1947 operations in the fields and refineries should be maintained at levels which will end the excesses which prevailed during 1946.

The compact committee estimates that the daily average production of domestic fields this year should be 4,655,000 bbl.; a decline from its estimated average production of 4,735,000 bbl. daily in 1946. This projection assumes there will be a small gain in the production of natural gasoline and related products with imports 20,000 bbl. daily greater in 1947 than in 1946. On this basis the stock situation of the individual products would be corrected to conform to seasonal requirements during 1947.

The difficulty in determining what the seasonal stock of the various products should be is admitted in all statistical analyses. Prewar standards do not apply not only because of the greatly increased demands but also because the seasonal conditions have changed so that over-all requirements are now greater during the winter months than those of summer. This reflects the greater uniformity throughout the year in gasoline consumption in this country, plus the fact that the consumption of the intermediate products has greatly expanded. There is the additional fact that because of unsettled labor conditions and frequent strikes, some operators maintain their inventories at higher levels than they ordinarily would. Economists are in agreement that part of the 1946 increase in petroleum inventories following the war period in which they were reduced to minimum levels, was desirable. These observers, however, would prefer to have any future increases in crude oil rather than in finished products. Because of the strong demand in all domestic areas, crude-oil inventories have shown little change since the close of the war.

UNITED STATES PETROLEUM DEMANDS AND SUPPLY, 1946 AND 1947 (BBL. DAILY)

REPORT OF ECONOMICS ADVISORY COMMITTEE TO INTERSTATE OIL COMPACT COMMISSION

Demand:	1945	1946	1947
Gasoline	2,151,000	2,110,000	2,200,000
Kerosene	224,000	265,000	270,000
Distillate	711,000	745,000	780,000
Residual	1,466,000	1,335,000	1,330,000
Others	796,000	828,000	845,000
Total demand	5,348,000	5,283,000	5,425,000
Supply:			
Crude petroleum	4,688,000	4,735,000	4,655,000
Natural gasoline	313,000	317,000	340,000
Imports	310,000	380,000	400,000
Total supply	5,311,000	5,432,000	5,395,000
Closing stocks:			
Gasoline	97,700,000	.....	93,400,000
Kerosene	10,400,000	.....	15,800,000
Distillate	35,800,000	.....	48,700,000
Residual	37,200,000	.....	50,600,000
Four major products	181,100,000	.....	208,500,000
Others	63,700,000	.....	68,800,000
Crude oil	218,800,000	.....	230,000,000
Total all oils	463,600,000	.....	507,300,000
Crude runs to stills	4,711,000	4,740,000	4,673,000

FIGURES FROM PETROLEUM ECONOMICS DIVISION—U. S. BUREAU OF MINES

Demand:	1946	1947	1947 % increase
Total	5,279,800	5,507,000	4.3
Motor fuel	2,119,400	2,205,580	4.0
Residual fuel	1,327,400	1,342,460	1.1
Distillate	736,700	794,500	7.8
Kerosene	264,100	276,700	4.8
All other oils	832,000	887,760	6.7
Exports:			
Total	433,100	401,300	*7.3
Crude oil	108,300	108,300	...
Products	324,800	293,000	10.8
Imports:			
Total	370,600	369,800	...
Crude oil	238,900	243,800	2.1
Products	131,700	126,000	*4.3
Crude runs to stills:			
Average daily	4,739,700	4,805,400	1.4
Production:			
Total	5,058,500	5,123,000	1.2
Crude oil	4,742,100	4,786,000	.9
Other oils	316,400	337,000	6.6
Change in stocks:			
Crude oil	7.8%	.0%	...
Natural gasoline	2.2	0.5	...
Refined oils	44.7	—6.5	...

*Decrease.

Refinery Yield Patterns

BY R. B. TUTTLE

THE outstanding development in refinery operations in 1946—the first full year of postwar operations—was the continued emphasis on increased production and yields of intermediate products. Previous to the war the usual yearly development was an increase in gasoline yields brought about by a reduction in the residual output of plant operations.

During the war, with emphasis as regards military and war production demands placed on heavier petroleum products, gasoline yields decreased the yield as shown in the accompanying table, 1945 being 40.9 per cent which compares with a 45 per cent yield in 1939. In 1945 kerosene yields were lower than in 1939 but all products classed as distillates and residuals were higher.

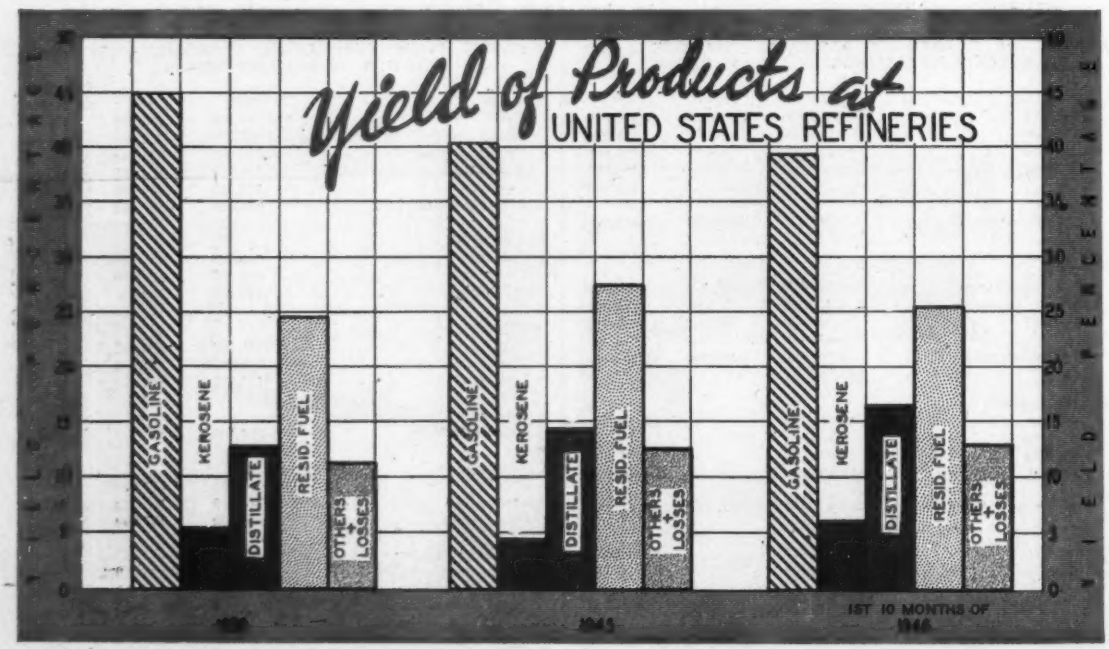
With the war demands no longer controlling in refinery operations, economists and plant operators generally were concerned with what the trend would be in postwar demands which in turn would be reflected in the gasoline yields at refineries. The record for 1946 reveals that gasoline demands in the United States (domestic and export) were supplied with a further decrease in plant yields of that product, but substantial increases in yields of burning oils and distillates were necessary to supply the requirements. In this connection the 1946 over-all demand for gasoline at refineries in this country was slightly under 1945, which included 8 months of war activities. The kerosene demand, however, based on Bureau of Mines reports for the first 10 months of 1946, expanded 18 per cent, and distillates, which include furnace oil, gas oil, and diesel fuel, increased nearly 5 per cent.

Part of this increased recovery of the intermediate products was obtained through lower yields of residual products along with a 1.7 per cent decrease in gasoline yields. Yields of lubricating oils, for which there has been an exceptionally strong demand throughout the year, increased slightly.

Processing Significance

The indicated trend toward greater production and consumption of intermediate products, if continued indefinitely, may affect, and be affected strongly by developments in new refining processes. The keynote of new refining processes, especially of catalytic cracking and reforming methods, is greater flexibility of operation. More than one authority on catalytic cracking has pointed out already that these processes can make economically far greater percentages of intermediate oils than are made through the conventional thermal cracking unit. More than a million barrels of catalytic cracking capacity has been built.

These intermediate oils are shown to be better quality, for many purposes, with often lower losses. Diesel fuels are made containing large percentages of catalytically cracked gas oil. These oils also show better physical qualities for burning oils for household and similar heating than thermally cracked oils;



DETERMINED BY SHIFTING DEMAND CYCLE

YIELDS—PER CENT OF CRUDE RUNS

	Gasoline S. R. and cracked	Kerosene	Distillate fuel oil	Residuum fuel oil	Lube oils	All others and losses
1939*	45.0	5.5	13.1	24.7	2.8	8.9
1945*	40.9	4.7	14.5	27.3	2.4	10.2
1946*:						
January	38.7	6.9	17.4	27.1	2.4	7.5
February	37.1	7.3	17.7	26.7	2.4	8.8
March	37.6	6.8	17.5	26.0	2.6	9.5
April	38.5	6.0	16.6	26.7	2.6	9.6
May	38.8	6.0	15.7	25.4	2.5	11.6
June	39.1	5.8	16.1	25.2	2.6	11.2
July	39.8	5.6	16.3	24.0	2.4	11.9
August	41.2	5.4	15.7	23.9	2.7	11.1
September	40.6	5.4	16.4	23.8	2.8	11.0
October	40.6	5.8	16.6	23.0	3.0	11.0
10-Month average	39.2	6.1	16.6	25.2	2.6	10.3

*B. M. reports.

CRUDE-OIL RUNS TO STILLS AT U. S. REFINERIES†

Year	Daily average‡
1937	3,242.3
1938	3,191.8
1939	3,391.4
1940	3,536.0
1941	3,860.8
1942	3,655.1
1943	3,917.1
1944	4,551.0
1945	4,711.1
1946*	4,735.5

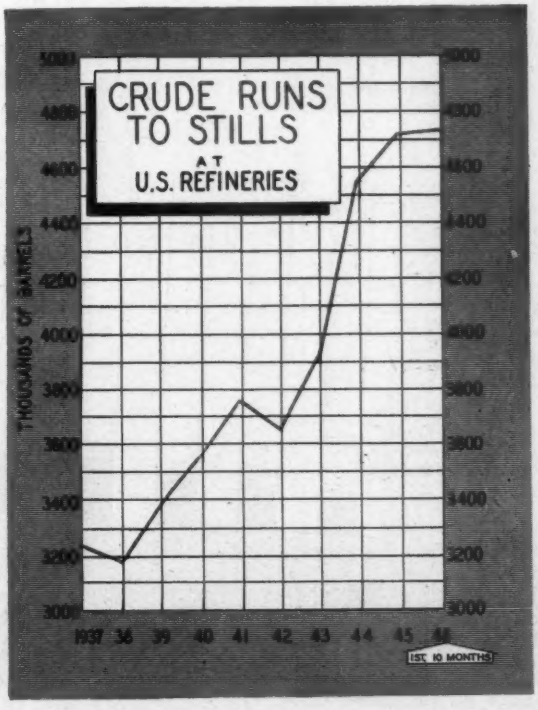
*Ten months. †B. M. reports. ‡Thousands of bbl.

far larger yields may be made without damage to the gasoline produced.

At the same time yields of motor and aviation fuel may be upped, maintaining elevated quality standards also, when demand requires. Catalytic gasoline is high in antiknock rating throughout its boiling range; thermal gasoline is much poorer in antiknock in its higher range, limiting maximum yield. This situation aids the catalytic-unit operator to boost octane number and gasoline yield, or diesel and heating oils, or kerosene and burning oils alternately as needed with the same modern equipment.

This trend toward intermediate-oil production also has to be considered from the standpoint of profit return for the refiner. The answer lies in the comparative net return from each product. Formerly motor fuel was considered the highest return product and brought the best price. Increased demand raised yields regularly, as stated. With increasing intermediate-oil demands, and a possible increase in average unit price for these products, the net margin between cost and sales prices for various products may be changed considerably. Even if gasoline remains the product showing the best return, the greater flexibility of operation of new processes may reduce cost and improve quality so that the netback from the intermediate products may be somewhat higher than has been the case in the past.

Yield of products in the residuum-fuel-oil group may be varied over a relatively broad range in the modern catalytic units. For given feed stocks having good cracking characteristics yield variations of these residuum products are shown to be from a few per cent up to 20 per cent, according to type of unit and method of operation. This flexibility offers the operator particular advantage over prewar operations in meeting local market conditions.



Discoveries

INDUSTRY ENDS

BY HERNDON DAVID

EXPLORATION during 1946 followed the general upward trend established during recent years as operators replayed the old areas and stepped far out into rank wildcat territory in an attempt to locate new oil reserves. A total of 4,518 exploratory wells, an increase of 6.2 per cent over 1945, was drilled during the year and resulted in the discovery of approximately 491 new oil reservoirs and new pay formations in previously productive fields. These, together with 144 extensions to older fields, represented an increase of 15.9 per cent over the previous year in the number of successful wildcats drilled.

The new discoveries accounted for an increase of nearly 150,000,000 bbl. of estimated reserves in the nation's future supply. While this does not represent an impressive amount when the large number of new fields is considered, it must be remembered that many of the fields will acquire added significance with future development. At best, it often takes as long as 2 years from the time a field is discovered until it is fully developed. At this rate it will be several years before the 1946 discoveries can be accurately evaluated and a true picture obtained of the total amount of oil they have uncovered.

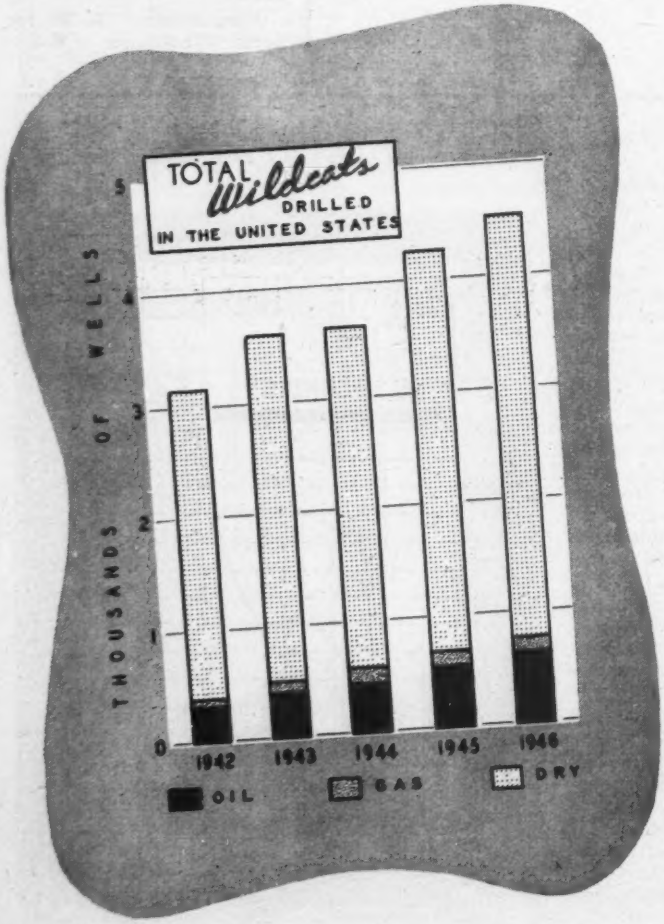
Texas continued its dominant position in exploratory activity, with 247 of 1,591 wildcats resulting in new oil discoveries and extensions. The Gulf Coast area received 79 new discoveries and extensions, the greatest number in any of the Texas areas. Of a total of 375 exploratory ventures, these represented an extremely high success ratio of 21.1 per cent. North Central Texas received the most extensive wildcatting campaign with 605 tests drilled, but only 76 of these were successfully completed as oil wells. While development work overshadowed exploration in the Permian basin area, 49 oil wells resulted from the 224 wildcats drilled there. In Southwest Texas, 268 exploratory ventures uncovered 23 new productive areas.

Illinois was second to Texas in wildcatting activity, with 96 of the 635 tests drilled uncovering new fields, new pays, and extensions. Oklahoma was third with 92 successes out of 573 attempts, and Kansas fourth with 31 successes out of 307 attempts.

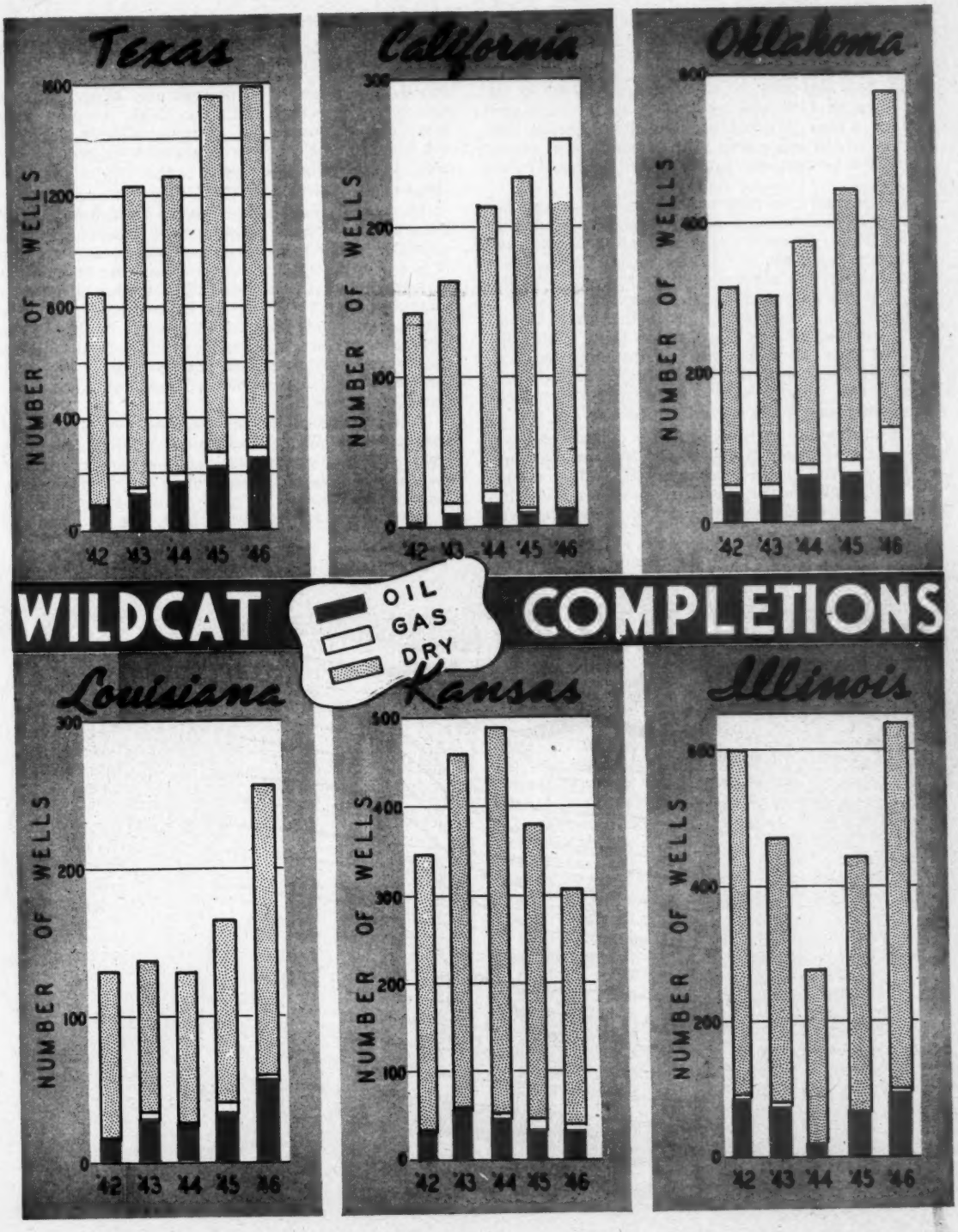
California, in fifth place with only 10 successful wells out of 260 wildcats drilled, failed to find enough new oil in 1946 to match withdrawals, and consequently reduced its reserves of crude oil and condensate. For several years, revisions and extensions have enabled the state to match or show slight gains in reserves, but the trend in 1946 was in the opposite direction. None of the new discoveries during the past year appears to be of primary importance from a production standpoint but extension work at such fields as Cymric, Newport, Race Track, Tejon, and Wilmington has shown promise.

The greater portion of Louisiana exploration was concentrated in the Gulf Coast area, which received 52 new discoveries and extensions from the 140 wildcats completed. New pay horizons and the development of flank production in the older fields appeared more significant at the close of the year than did the new field discoveries. In the North Louisiana area, only 9 discoveries resulted from the 114 wildcats drilled and none of these appeared to be major new fields.

In addition to the new oil discoveries, the 1946 exploration campaign resulted in the discovery of 127 new gas pools and extensions. Oklahoma dominated in this category for the first time in several years with 38 successful gas wells.



GREATEST *Wildcatting* YEAR



PEACETIME Production

BY CHARLES J. DEEGAN

THE first full year of peacetime operations in the industry, 1946, was marked by the greatest production in history, exceeding by a slight margin 1945, most of which was a war year. Production at nearly 1¾ billion barrels, was up, in round figures, 37,000,000 bbl.

The increase in percentage was very small, 2.2 per cent, with Louisiana, up 21,000,000 bbl.; Texas, up 9,000,000 bbl.; Colorado, up nearly 7,000,000 bbl.; and Mississippi, up 5,000,000 bbl., accounting for the principal increases. California, down almost 10,000,000 bbl., was the only state to show a major decrease.

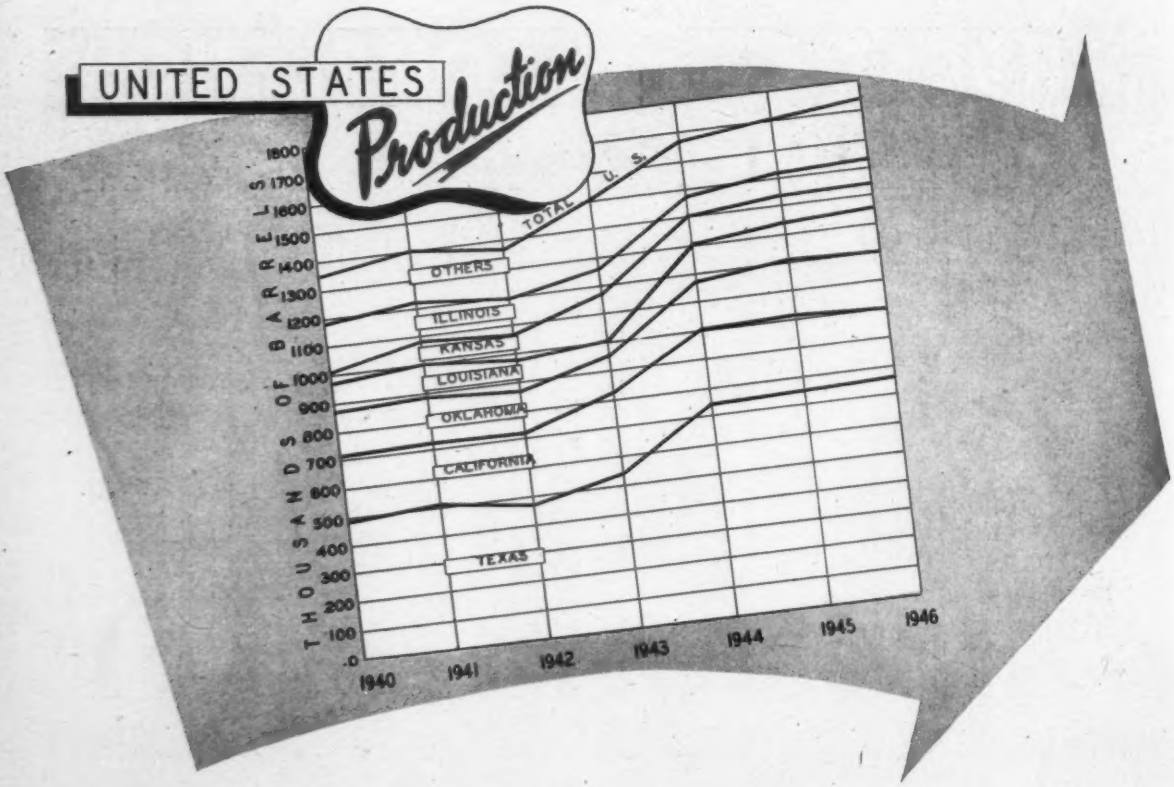
Among the six leading producing states, Texas easily maintained first place, followed by California. In third place, Louisiana with a substantial increase, displaced Oklahoma, the latter dropping to fourth. Kansas and Illinois, with only small changes, retained fifth and sixth places respectively.

The influence of major fields (those with an ultimate production of 100,000,000 bbl. or more) is clearly shown in the accompanying table. There are only slightly over 100 of these fields, and this includes practically every field of that size ever found, regardless of its present age. Many of them are several decades old. Yet these comparatively few fields accounted for, in round figures, 880,000,000 bbl. out of the year's production, or over 50 per cent. Incidentally they hold nearly 65 per cent of the nation's proved oil reserves.

California's decrease is due to the shutting in of the Elk Hills Naval Reserve, with the end of the war. Except for this, the state showed a net increase in production, winding up the year with the second highest total ever recorded. Developments at Wilmington in the 237 Zone, and at Coalinga Nose were the highlights of the year. Prospects are good for increased production from the Cymric field of Kern County next year, and the coastal area is currently the scene of a development campaign that should bring good results.

Texas achieved its net increase by stepping up production in West Texas substantially, some increase in the coastal and southwest area, slight decreases in the Panhandle and eastern portions, with North Texas a bit more than holding its own.

Louisiana's increases came from both the northern



EXCEEDS THAT AT PEAK OF WAR

fields and the southern part of the state. The big increase in the northern part was the result of an active development campaign in the Delhi area. In the southern part, Egan, West Tepetate, Delta Farms, Vinton, and Bayou Sale contributed substantially to the increase.

Oklahoma's decrease of 808,000 bbl. is the result of a 2,983,000-bbl. decrease at West Edmond and a decline of 2,275,000 bbl. at Oklahoma City.

Kansas and Illinois, with a slight increase and decrease respectively, ended up about even with 1946 production in the two states. In both it was the same story; scattered development of small new pools and extensions to old ones, just about offset the normal decline.

The six major producing states, on net balance, even after California's drop, accounted for just about half of the 1946 increase. All other states combined provided the other half. However, of the states outside the big six, Colorado, Mississippi, and Wyoming accounted for an increase of 15,290,000 bbl., with the remaining smaller states providing a net increase of 3,338,000 bbl.

In spite of its giant size and wide variety of producing areas, the production of Texas is just as concentrated in a few large fields as that of California. Twenty major pools account for almost 51 per cent of the Texas total. They are: (1) East Texas 120,581,000 bbl.; (2) Agua Dulce-La Gloria 23,661,000; (3) Wasson 21,299,000; (4) Slaughter 20,858,000; (5) Conroe 20,718,000; (6) Hastings 19,355,000; (7) Webster 18,708,000; (8) Keystone 15,754,000; (9) Tom O'Connor 15,027,000; (10) Hawkins 14,786,000; (11) Yates 13,555,000; (12) Fullerton 10,930,000; (13) Van 10,690,000; (14) Anahuac 10,127,000; (15) North Cowden 10,098,000; (16) McElroy 9,784,000; (17) Goldsmith 8,838,000; (18) K-M-A 7,861,000; (19) Seminole 7,486,000; and (20) West Ranch 7,079,000. These 20 big fields accounted for 387,195,000 bbl. out of a 1946 state total of 764,593,000.

Eight pools accounted for nearly half of California's production: (1) Wilmington 40,244,000 bbl.; (2) Coalinga Nose 20,422,000; (3) Huntington Beach 17,144,000; (4) Ventura Avenue 16,899,000; (5) Buena Vista Hills 14,762,000; (6) Kettleman North Dome 13,867,000; (7) Midway-Sunset 13,469,000; (8) Santa Maria Valley 11,944,000; total 148,751,000 for these pools compared to 316,606,000 for the total state.

In Southern Louisiana, production is more scattered and there are many moderately good pools that make up that area's total. Thirteen of the larg-

UNITED STATES PRODUCTION CRUDE OIL—BY STATES—1941-1946

(In thousands of barrels per year)

	1946 prod. change	1946	1945	1944	1943	1942	1941	Cum. prod. 1857-1946
Alabama	+ 201	382	181	43	.....	.....	.....	.....
Arkansas	— 514	28,099	28,613	29,418	27,600	26,628	26,327	693,867
California	— 9,876	316,606	326,482	311,793	284,188	248,326	230,263	7,328,787
Colorado	+ 6,632	11,591	4,959	2,944	2,320	2,199	2,150	66,385
Illinois	— 597	74,613	75,210	77,413	82,260	106,391	132,393	1,236,492
Indiana	+ 1,963	6,831	4,868	5,118	5,283	6,743	7,411	159,169
Kansas*	+ 220	96,579	96,359	99,227	106,839	98,996	85,171	1,669,152
Kentucky†	+ 807	11,132	10,325	9,621	>7,909	>4,556	4,794	180,903
Louisiana	+21,042	151,608	130,566	129,207	123,592	115,785	115,908	1,849,707
Michigan	— 121	17,138	17,259	18,490	20,768	21,754	16,359	256,829
Mississippi	+ 5,473	24,248	18,775	16,337	18,807	28,833	15,327	126,950
Montana	+ 632	9,029	8,397	8,627	7,916	8,074	7,526	133,487
New Mexico	— 577	36,704	37,281	39,555	38,896	31,544	39,569	485,951
New York	+ 242	4,890	4,648	4,697	5,059	5,421	5,185	158,155
Ohio	+ 64	2,892	2,828	2,937	3,322	3,543	3,510	604,023
Oklahoma	— 808	137,228	138,036	124,616	123,152	140,690	154,702	5,588,189
Pennsylvania	+ 542	13,057	12,515	14,118	15,757	17,779	16,750	1,088,277
Texas	+ 9,060	764,593	755,533	748,122	549,343	483,097	505,572	10,438,451
West Virginia	+ 76	2,955	2,879	3,070	3,349	3,574	3,433	432,706
Wyoming	+ 3,185	38,544	35,359	32,388	34,253	32,812	29,878	705,465
Florida	+ 23	53	30	12	.....	.....	.....	.....
Total United States	+37,669	1,748,772	1,711,103	1,677,753	1,505,613	1,386,645	1,402,228	33,202,945

*Includes Nebraska and Missouri. †Includes Tennessee.

est pools account for only 36 per cent of the production. They are: (1) Erath, 6,609,000 bbl.; (2) Delta Farms 4,481,000; (3) Lafitte 4,383,000; (4) Paradis 3,689,000; (5) Bayou Sale 3,502,000; (6) Quarantine Bay 3,205,000; (7) Grand Bay 3,094,000; (8) Ville Platte 2,577,000; (9) Iowa 2,497,000; (10) Anse La Butte 2,441,000; (11) West Hackberry 2,145,000; (12) Caillou Island 2,078,000; (13) Jennings 2,028,000.

PRODUCTION AND RESERVES OF U. S. MAJOR FIELDS*

(In thousands of barrels)

State and field—	Estimated ultimate production	Remaining reserve 1-1-47	Cumulative prod. to 1-1-47	Production 1946	1945	1944	1943	1942
CALIFORNIA:								
Buena Vista	430,000	99,864	330,136	14,762	15,579	6,888	5,278	5,296
Coalinga, East	325,000	68,931	256,069	6,253	7,563	8,001	7,069	5,234
Coalinga, Nose	380,000	261,321	118,679	20,422	21,096	20,772	17,977	8,465
Coalinga, West	185,000	26,243	158,757	2,523	2,890	2,657	2,216	2,102
Coles Levee, North	105,000	73,776	31,224	5,677	6,008	5,770	4,790	3,978
Elk Hills	445,000	250,268	194,732	3,668	15,813	7,722	5,373	4,363
Kern Front	107,000	37,804	69,196	4,550	4,686	3,195	2,663	2,409
Kern River	330,000	32,121	297,879	3,600	3,547	3,478	3,095	2,667
Kettleman North Dome	440,000	116,587	323,413	13,867	14,349	15,135	15,290	13,018
McKittrick-Cymric	143,000	38,189	104,811	4,803	2,017	1,793	1,712	1,782
Midway-Sunset	820,000	116,182	703,818	13,469	14,373	15,120	14,929	15,108
Mount Poso	156,000	63,984	92,016	5,956	6,726	7,951	8,350	8,008
Rio Bravo	100,000	61,683	38,317	4,855	5,732	5,920	5,443	3,575
Santa Maria	232,000	69,008	162,992	4,906	5,057	4,879	3,081	2,742
Santa Maria Valley	170,000	95,099	74,901	11,944	13,538	11,281	8,288	7,523
Ventura Avenue	510,000	189,985	320,015	16,899	17,663	17,487	15,489	13,652
Brea Olinda	223,000	42,687	180,313	3,948	4,194	4,720	4,248	3,705
Coyote, West	195,000	45,012	149,988	5,575	5,266	4,433	4,421	3,783
Dominguez	235,000	67,166	167,834	5,876	6,722	7,872	9,123	7,920
Huntington Beach	535,000	156,265	378,735	17,144	17,588	17,141	13,217	11,980
Inglewood	200,000	43,683	156,317	4,718	5,840	6,460	6,909	6,742
Long Beach	805,000	83,478	721,522	9,107	9,803	10,792	11,552	12,978
Montebello	173,000	27,132	145,868	3,133	3,658	3,904	3,964	3,925
Richfield	132,000	22,883	109,117	2,710	2,725	2,411	2,517	2,751
Santa Fe Springs	567,000	58,567	508,433	6,113	6,258	6,831	7,303	7,756
Seal Beach	142,000	36,759	105,241	3,695	3,425	2,566	2,586	2,695
Torrance	152,000	32,253	119,747	3,142	3,244	3,180	2,832	2,993
Wilmington	707,000	385,486	321,514	40,244	36,222	36,765	34,360	33,447
Subtotal	8,944,000	2,602,416	6,341,584	243,559	261,382	245,124	224,055	200,597
ROCKY MOUNTAIN AREA:								
Cut Bank	103,000	51,235	51,765	4,606	4,907	5,443	5,327	5,513
Elk Basin	220,000	191,351	28,649	5,838	3,990	3,500	2,596	204
Lance Creek	115,000	41,243	73,757	4,669	5,463	6,535	7,274	8,605
Oregon Basin	158,000	119,386	38,614	4,032	4,394	4,392	4,981	7,127
Rangely	250,000	238,467	11,533	8,018	1,495	392	321	307
Salt Creek	377,000	54,621	322,379	4,658	4,499	4,772	4,789	4,954
Subtotal	1,223,000	696,303	526,697	31,821	24,748	25,034	25,288	26,710
OKLAHOMA:								
Avant	105,000	7,287	97,713	716	750	789	877	833
Bowlegs	135,000	8,310	126,690	1,169	1,250	1,517	1,714	1,889
Burbank	310,000	46,138	263,862	4,813	5,488	5,581	5,890	6,102
Cushing	405,000	31,046	373,954	2,782	2,814	2,925	2,895	3,054
Earlsboro	135,000	5,024	129,976	716	784	887	995	1,118
Fitts	115,000	11,236	103,764	1,518	1,701	2,167	3,477	4,218
Glenn Pool	250,000	19,277	230,723	2,418	2,359	2,135	1,740	1,468
Healdton	225,000	21,651	203,349	2,438	2,423	2,509	2,614	2,817
Hewitt and West	113,000	9,261	103,739	1,698	2,055	2,040	2,368	5,162
Little River	131,000	12,030	118,970	1,159	1,235	1,432	1,550	1,876
Oklahoma City	700,000	57,454	642,546	10,693	12,968	16,235	15,241	31,293
St. Louis	180,000	11,130	168,870	1,500	1,775	2,593	3,615	6,349
Seminole City	150,000	13,080	136,920	1,307	1,343	1,622	1,818	1,991
Tonkawa	130,000	6,338	123,664	396	385	411	503	593
West Edmond	180,000	121,455	58,545	23,585	26,775	7,731	474	0
Subtotal	3,264,000	380,715	2,883,285	56,898	64,115	50,574	45,771	68,763
KANSAS:								
El Dorado	225,000	32,218	192,782	2,618	2,628	2,530	2,433	2,529
Silica	100,000	27,823	72,177	5,195	5,888	7,215	8,890	8,167
Trapp	145,000	61,091	83,909	11,042	10,631	9,183	10,895	9,759
Subtotal	470,000	121,132	348,868	18,855	19,127	18,928	22,218	20,455
ARKANSAS:								
Magnolia	100,000	54,178	45,822	4,683	4,963	5,591	6,001	6,366
Smackover	460,000	48,891	411,109	4,070	4,130	4,262	4,458	4,893
Subtotal	560,000	103,069	456,931	8,753	9,093	9,853	10,459	11,259
LOUISIANA:								
Delhi-Big Creek	160,000	152,511	7,489	6,359	1,130	.....	.....	.....
Caddo	190,000	16,574	173,426	1,897	1,910	2,108	2,399	2,692
Erath	100,000	82,054	17,946	6,609	6,318	4,184	228	197
Haynesville	125,000	34,104	90,896	2,936	3,156	4,329	5,537	4,642
Jennings	125,000	28,528	96,472	2,028	2,443	2,871	3,437	4,408
Rodessa	100,000	11,715	88,285	2,025	4,169	4,886	5,872	7,554
Subtotal	800,000	325,486	474,514	21,854	19,126	18,378	17,473	19,493

PRODUCTION AND RESERVES OF U. S. MAJOR FIELDS (Continued)

(In thousands of barrels)

State and field—	Estimated ultimate production	Remaining reserve 1-1-47	Cumulative prod. to 1-1-47	Production 1946	1945	1944	1943	1942
MISSISSIPPI:								
Cranfield	100,000	92,902	7,098	4,457	2,103	525	13	.....
Heidelberg	102,000	93,577	8,423	4,084	2,898	1,441	.....	.....
Tinsley	170,000	75,729	94,271	8,090	9,345	11,803	17,264	28,177
Subtotal	372,000	262,208	109,792	16,631	14,346	13,769	17,277	28,177
ILLINOIS:								
Bridgeport	255,000	18,715	236,285	2,272	2,144	1,932	1,880	2,027
Louden	180,000	50,520	129,480	8,243	9,483	12,870	14,443	20,407
Robinson	164,000	10,724	153,276	1,118	1,095	1,078	1,273	1,391
Salem	239,000	40,807	198,193	5,967	6,837	9,312	11,912	16,872
Subtotal	838,000	120,766	717,234	17,600	19,339	25,192	29,508	40,697
NEW MEXICO:								
Eunice	150,000	68,321	81,679	5,094	5,707	6,393	6,464	5,218
Hobbs	175,000	58,808	116,192	3,569	3,874	4,101	3,798	2,973
Monument	175,000	94,591	80,409	6,565	7,139	7,516	7,235	5,729
Vacuum	130,000	94,927	35,073	4,054	4,525	5,001	4,947	3,926
Subtotal	630,000	316,647	313,353	19,282	21,245	23,011	22,444	17,846
EASTERN TEXAS:								
East Texas field	5,000,000	2,642,533	2,357,467	120,581	131,210	134,768	128,568	120,681
Hawkins	450,000	388,312	61,688	14,786	12,210	13,318	14,224	5,445
Mexia	107,000	6,591	100,409	467	491	501	514	562
Powell	125,000	7,262	117,738	440	454	475	508	554
Talco	170,000	77,015	92,985	8,741	8,284	8,673	9,220	9,505
Van	450,000	277,097	172,903	10,690	10,494	11,636	6,215	3,404
Subtotal	6,302,000	3,398,810	2,903,190	155,705	163,143	169,371	159,249	140,151
NORTH TEXAS:								
K.M.A.	185,000	73,985	111,015	7,861	8,309	9,546	10,784	11,236
Subtotal	185,000	73,985	111,015	7,861	8,309	9,546	10,784	11,236
SOUTHWEST TEXAS:								
Luling-Branyon	100,000	12,030	87,970	1,405	1,563	1,772	1,650	1,549
Subtotal	100,000	12,030	87,970	1,405	1,563	1,772	1,650	1,549
WEST TEXAS:								
Big Lake	120,000	13,361	106,639	1,279	1,407	1,535	1,191	1,289
Cowden, North	165,000	107,416	57,584	10,098	9,997	9,164	4,051	3,018
Fullerton	225,000	203,623	21,377	10,930	7,863	2,804	350	113
Goldsmith	250,000	176,999	73,001	8,838	8,381	8,641	7,353	6,503
Hendricks	225,000	14,006	210,994	1,393	1,555	1,738	2,073	2,512
Howard-Glasscock	185,000	61,340	123,660	4,993	4,948	4,817	4,032	4,814
Keystone	370,000	333,542	36,458	15,754	6,535	2,453	1,743	1,703
McCamey	110,000	42,413	67,587	3,281	3,199	3,301	3,190	3,197
McElroy	280,000	115,452	164,548	9,784	10,717	10,416	6,148	4,909
Seminole	130,000	97,333	32,667	7,486	8,088	8,777	2,840	1,431
Slaughter	480,000	386,835	93,165	20,858	23,440	23,081	11,241	7,680
T-X-L	150,000	143,915	6,085	5,323	510	252	.....	.....
Ward, North and Estes	115,000	58,207	56,793	4,328	4,822	4,811	3,720	3,486
Wasson	580,000	456,658	123,342	21,299	23,256	23,852	12,420	9,559
Yates	640,000	324,744	315,256	13,555	13,053	12,639	8,577	6,640
Subtotal	4,025,000	2,535,844	1,489,156	139,199	127,371	118,281	69,829	56,854
TEXAS GULF COAST:								
Agua Dulce to La Gloria	1,050,000	982,534	67,466	23,661	7,808	3,486	1,834	732
Anahuac	235,000	169,234	65,766	10,127	10,823	11,885	8,902	3,588
Barbers Hill	110,000	24,868	85,132	1,848	1,927	2,066	2,343	2,862
Conroe	500,000	272,750	227,250	20,718	20,992	23,192	19,957	13,508
Hastings	375,000	249,001	125,999	19,355	20,808	22,167	18,804	10,432
Hull	115,000	12,748	102,252	1,221	1,489	1,631	1,886	2,238
Humble and Light	138,000	7,245	130,755	773	821	881	737	840
Katy	110,000	96,119	13,881	4,631	467	194	55	.....
Old Ocean	215,000	191,268	23,732	6,107	5,936	5,516	4,831	3,728
Spindletop	130,000	1,770	128,230	223	273	341	373	419
Thompson	200,000	119,719	80,281	9,361	12,749	13,549	10,026	5,390
Tom O'Connor	450,000	351,716	98,284	15,027	17,676	18,744	12,690	6,915
Webster (Friendswood)	310,000	226,186	83,814	18,708	19,820	20,902	11,457	3,620
West Columbia	125,000	24,148	100,852	2,329	2,626	2,584	2,050	1,990
West Ranch	165,000	124,740	40,260	7,079	7,127	8,130	6,826	5,243
Subtotal	4,228,000	2,854,046	1,373,954	141,168	131,042	135,168	102,031	61,505
Total major fields	31,941,000	13,803,457	18,137,543	880,591	883,949	864,001	758,036	705,292
Total United States	.....	21,345,138	33,202,945	1,748,772	1,711,103	1,677,753	1,505,613	1,386,645
Per cent	.....	64.7	54.5	50.4	51.7	51.5	50.3	50.9

*Fields with estimated ultimate production of 100,000,000 bbl. or over.

Proven Reserves INCREASE

BY CHARLES J. DEEGAN

THE industry starts 1947 with a proven-reserve inventory slightly higher than a year ago, despite a 1946 production withdrawal that exceeded the wartime peak. With the end of the war, and the relaxation of its accompanying restrictions, the industry set out to adjust to peacetime operations, with competition, supply, demand, and eventually price resuming their normal functions as regulators of the plans of thousands of individual operators.

The aboveground inventory, both crude and products, was at bed rock minimum for streamlined operation in a military economy. This inventory has been built up to normal, perhaps slightly above normal, during 1946.

Proven crude-oil reserves in sight, the underground, raw-material inventory, at the end of the war were some 10 per cent below normal in relation to the production rate. However, all demand forecasts were for a breathing spell of a year to a year and a half, during which demand would be low until the automobile manufacturers could put millions of cars back on the road, and oil-burner manufacturers could catch up with demand. Therefore, at the beginning of 1946, the industry thought it could use that breathing spell period to build its inventory of proven crude reserves back to normal.

Instead of a breathing spell, during which production requirements would drop, while efforts were being made to build up the reserves, the industry had to meet a higher production withdrawal than during the war. The wildcat campaign to build up reserves was at an all-time high, but even then did not get as high as the operators wanted. Strikes and the resultant shortages of steel and other materials were largely responsible.

However, the industry managed to meet the heavy withdrawal of 1946 with a slight margin to spare, netting an increase of about 1¼ per cent over 1945. Oil continued to be found in the areas where the most production was already being obtained, and there were no changes in the rank as to reserves among the four leading states, Texas, California, Louisiana, and Oklahoma.

Wyoming improved its reserve position slightly, taking fifth place away from Kansas, as the latter failed to provide enough new oil to match the heavy withdrawals, slipping to sixth place as a result. New Mexico dropped off, but still maintained seventh place.

Illinois continued to confound prophets of a sharp decline in production, and improved its total reserve in barrels, but not enough to hold its 1945 position of eighth place. That position was claimed by Mississippi, where the proving up of its potential went on during the year, with the result that its reserves were stepped up substantially. Illinois, however still maintains ninth place by a wide margin.

Arkansas, in tenth place last year, still holds the same position, by virtue of almost maintaining its reserves in barrels. However, it is much more closely pressed this year by eleventh-place Colorado, where developments at Rangely just fell short of pushing the total reserves ahead of Arkansas.

Pennsylvania is still in twelfth place, due to secondary-recovery activity during the year. The recent announcement that favorable experimental results had been obtained in the laboratory in testing the new bacteria-injection method of increasing oil recovery from sands and lime, may result in a drastic revision of that state's reserves at some later date.

In fact, if this new discovery should eventually prove practical in the field, it may alter the industry's idea of the order of magnitude of all of our present proven reserves.

Mississippi showed the largest increase in reserves, 172,176,000 bbl.; followed by Louisiana with 150,765,000 bbl.; Colorado with 66,473,000 bbl.; and Texas with

DESPITE RECORD OUTPUT

59,511,000 bbl., despite its job of supplying the greatest individual part of the year's record-breaking production. California showed the greatest loss, 82,406,000 bbl.; with Oklahoma and New Mexico a close second and third with losses respectively of 56,145,000 and 52,198,000 bbl. All other states combined, on net balance, just about broke even, gains in some about offset by losses in the others.

Mississippi's gain was due mostly to developments that moved many of its promising pools from the potential class to proven, insofar as reserves are concerned. A substantial part of Louisiana's gain was due to development of the Delhi-Big Creek area, where a large stratigraphic-trap type of pool is proven. Colorado's gain came entirely from developments at Rangely, which has moved into the class of really big fields. Texas showed its greatest gains in the southwest, where development during the year has practically proved up one huge field, about 55 miles long, from Agua Dulce to La Gloria. West Texas also made substantial contributions, principally from the pre-Permian development.

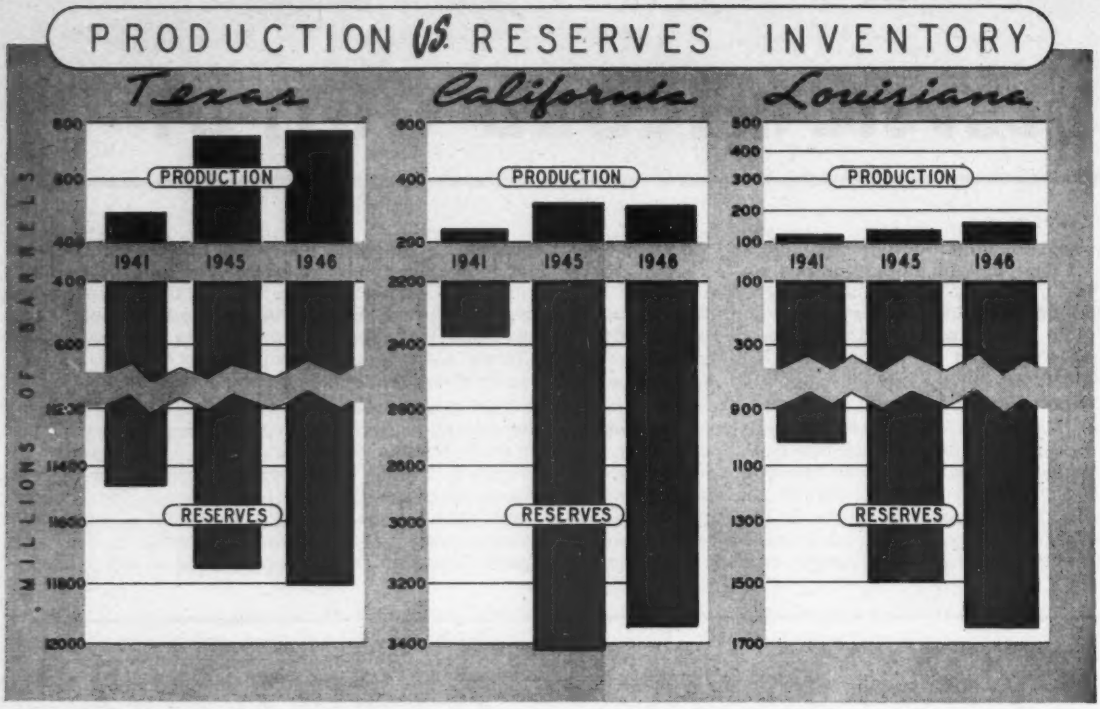
On the surface, it would appear that the industry is having a hard time in building reserves, just barely holding its own in fact. Yet among the exploration men of the various companies, there is more optimism than for several years. More elaborate exploration campaigns are being planned on a larger scale than anything the industry has ever seen. These are not being made in a mood of des-

Proven Oil Reserves, January 1, 1947

(In thousands of barrels)

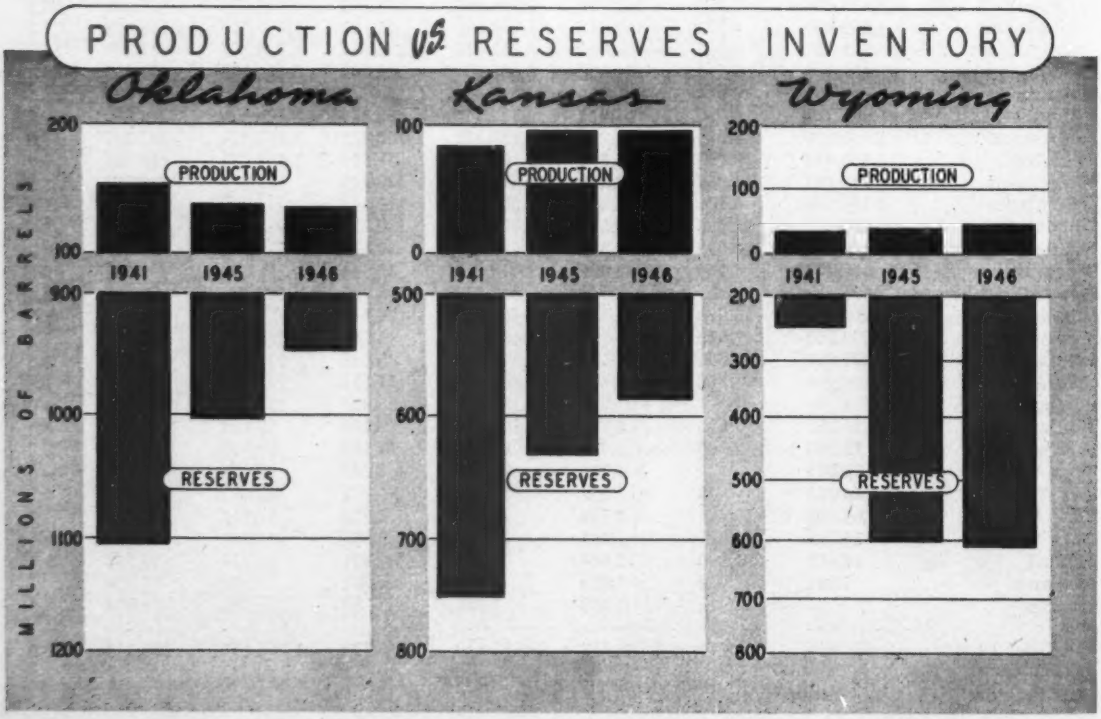
	Estimated reserves as of 1-1-46	1946 discoveries	Extensions and revisions	Total	Less 1946 production	Estimated reserves as of 1-1-47	Gain or loss (—)	Per cent U.S. total
Texas	11,740,651	43,490	+780,614	12,564,755	764,593	11,800,162	+59,511	55.2
Panhandle	389,317	0	—21,298	368,019	29,662	338,357	—50,960	1.6
West	3,088,044	16,910	+331,992	3,436,946	191,101	3,245,845	+157,801	15.1
North	482,738	14,020	—16,404	480,354	56,173	424,181	—58,557	2.0
Eastern	3,418,489	3,060	+301,700	3,723,249	173,590	3,549,659	+131,170	16.5
Southwest	1,059,404	4,520	+640,647	1,704,571	87,153	1,617,418	+558,014	7.6
Gulf Coast	3,302,659	4,980	—456,023	2,851,616	226,914	2,624,702	—677,957	12.3
California	3,431,554	32,700	+201,500	3,665,754	316,606	3,349,148	—82,406	15.7
Southern	1,093,805	18,800	+97,500	1,210,105	113,225	1,096,880	+3,075	5.1
Coastal	609,354	4,350	+3,750	617,454	52,560	564,894	—44,460	2.7
Northern	1,728,395	9,550	+100,250	1,838,195	150,821	1,687,374	—41,021	7.9
Louisiana	1,493,870	10,770	+291,603	1,796,243	151,608	1,644,635	+150,765	7.7
Northern	299,602	1,850	+139,259	440,711	32,942	407,769	+108,167	1.9
Southern	1,194,268	8,920	+152,344	1,355,532	118,666	1,236,866	+42,598	5.8
Oklahoma	1,003,419	22,580	+58,503	1,084,502	137,228	947,274	—56,145	4.4
Kansas*	631,912	9,020	+35,393	676,325	96,579	579,746	—52,166	2.7
Wyoming	602,027	4,120	+43,806	649,953	38,544	611,409	+9,382	2.9
New Mexico	560,112	100	—15,594	544,618	36,704	507,914	—52,198	2.4
Illinois	341,076	15,030	+91,855	447,961	74,613	373,348	+32,272	1.8
Mississippi	300,213	320	+196,104	496,637	24,248	472,389	+172,176	2.2
Arkansas	288,906	5,000	+14,190	308,096	28,099	279,997	—8,909	1.3
Colorado	206,036	360	+77,704	284,100	11,591	272,509	+66,473	1.3
Pennsylvania	108,376	.....	+41,723	150,099	13,057	137,042	+28,666	0.6
Montana	94,393	640	+9,185	104,218	9,029	95,189	+796	0.5
Michigan	73,699	1,000	+11,475	86,174	17,138	69,036	—4,663	0.3
New York	69,828	.....	—4,785	65,043	4,890	60,153	—9,675	0.3
Ky., Tenn.	44,922	500	+12,082	57,504	11,132	46,372	+1,450	0.2
West Virginia	35,102	.....	+3,700	38,802	2,955	35,847	+745	0.2
Ohio	25,113	.....	+1,407	26,520	2,892	23,628	—1,485	0.1
Indiana	24,819	1,480	+15,446	41,745	6,831	34,914	+10,095	0.2
Alabama	1,996	0	+1,812	3,808	382	3,426	+1,430	...
Florida	.....	.....	+1,053	1,053	53	1,000	+1,000	...
Total U. S.	21,078,024	147,110	+1,868,776	23,093,910	1,748,772	21,345,138	+267,114	100.0

*Includes Nebraska-Missouri.



peration. The feeling is that the industry is now big enough to absorb large volumes of oil without depressing the market. Therefore, if a large-scale exploration program finds large fields, in which one operator can have the whole, or greater portion, they can be developed systematically.

A slow and cautious stepping out to define the boundaries of a field, and a controlled, and planned development, would cut the cost of development to the operator. It would also result in a substantial time lag between the discovery date and the time when the proven reserves, estimated on the conservative basis currently used, would reflect the true size of the discovery.



World Production

BY WARREN W. BURNS

GAINS OUTSIDE U. S. MORE THAN OFFSET LOSSES

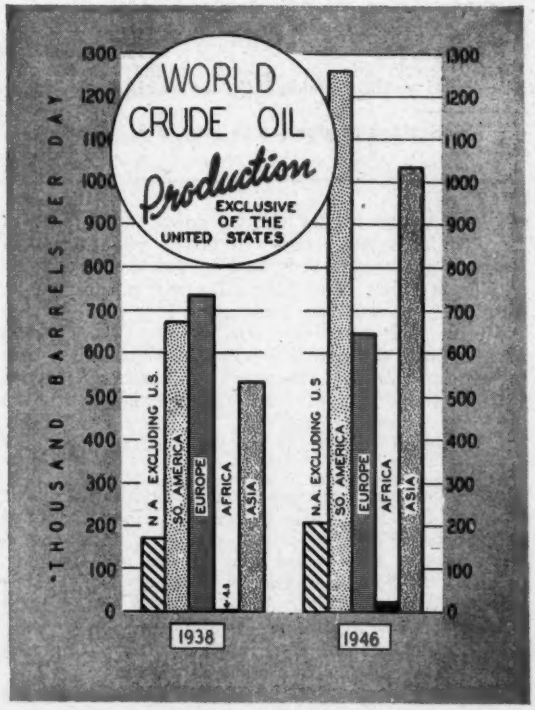
AS the first full year after World War II was brought to an end, interest in world oil affairs centered in the Middle East where changes in ownership were under way and where it is agreed reserves larger than any other section of the world have been definitely established. As shown in the accompanying table, world crude-oil production outside the United States in the closing weeks of 1946 averaged 3,169,000 bbl. daily, an increase over the war peaks of 1945 and approximately 50 per cent greater than the prewar year of 1938.

What about oil from the Middle East?

With recent developments this has become a question with which oil men and the public alike—here in the United States and abroad—will be greatly concerned during the next 12 months.

The economic and political considerations are tremendous. That the United Nations will eventually grapple with the situation is now readily admitted.

And concurrently, it is readily admitted that Washington, London, and Moscow are destined to play important roles. The question of who controls the world's oil reserves, and in particular those in the Middle East, looms even larger than it did at the close of the first World War. Nobody expects another war, but the world's leading nations are taking no chances. However, this realistic view is greeted differently, and understandably so, by the various interests involved.



And while Middle East oil was more or less in the minds of many oil men throughout 1946, developments in December highlighted and overshadowed the entire international oil picture for that year.

Standard Oil Co. (N.J.), Socony-Vacuum Oil Co., Inc., Standard Oil Co. of California, The Texas Co., and British Anglo-Iranian Oil Co., Ltd., were and are doing their utmost to assure themselves of a share in the vast postwar oil markets. On the other hand there are those who fear that the moves to expand ownership and increase the production of Middle East oil will harm the domestic market in the United States.

But more than oil men are concerned over the Middle East. For instance, the governments of Venezuela and Colombia are already wondering aloud what this will mean to production in their countries. Will Venezuela and Colombia, to mention the two most prolific South American producing countries, be relegated to a role of "oil-reserve countries?" What will increased oil production from the Middle East mean, with regard to supplying crude oil to Europe and Africa? Will the Venezuelan and Colombian governments enact legislation more favorable to participation of outside capital in those countries? The reaction on Peru, for instance, will be beneficial, it is believed. In Peru a law to liberalize concessions is now before the congress. Companies with the necessary capital are still interested, despite Middle East commitments.

As to what increased Middle East oil production will mean to the Eastern and Western Hemispheres, Socony-Vacuum recently summed it in stating that "the arrangements will be helpful in bringing about the supplying of Eastern Hemisphere markets with Eastern Hemisphere crudes, and at the same time will make fully available Western Hemisphere crudes for growing Western Hemisphere needs."

Actually, there need be no worry on the part of South American oil-producing countries, one high oil-company official told The Journal, "for looking at the long-range picture the industrial needs of Latin America are even greater than any of us now realize." However, it is probable that the anticipated increased demand will not be felt for several years. On the other hand Middle East production is also a long-range proposition, and it is pointed out that international postwar readjustments—insofar as oil is concerned—presently loom as greater problems

than will be the case when the time comes to face them.

But this is of little satisfaction to certain domestic interests in the United States, interests which see a "monopoly of control" in the foreign oil fields. And it is certain that 1947 will see these interests loudly object to entry of additional barrels of foreign oil—except, perhaps, on a quota basis—to the United States.

Moscow has already given its vast propaganda machine a "jab in the arm," with the expected press and radio blasts denouncing Anglo-American oil negotiations in the Middle East. Russia's "party line" in the press and on the air is too old to be effective in itself. But it is certain that Russia's undercover moves in the Middle East areas will continue to be effectively combated by the oil interests there, insofar as providing adequate housing, increased educational opportunities, and the general awakening of the peoples to the benefits of civilization and democracy are concerned—as countries of the Western world vision these blessings.

The December 1946 developments which revitalized the current international press and radio discussions on Middle East oil were twofold, both involving two major American oil companies: Jersey Standard and Socony-Vacuum. First, it was revealed that negotiations are under way whereby Jersey Standard will acquire a 30 per cent interest in Arabian American Oil Co., and Socony-Vacuum, a 10 per cent interest. Arabian American is now jointly owned by Standard Oil Co. of California and The Texas Co., and holds concessions covering 435,000 sq. miles, or 278,000,000 acres, with preferential rights on another 74,880,000 acres in Arabia. The reserves in one field alone, Abqaiq, may be in excess of 4,000,000,000 bbl.

The other December disclosure was confirmation by Jersey Standard and Socony-Vacuum that a preliminary agreement had been reached with Anglo-Iranian Oil Co., Ltd., (56 per cent owned by the British Government) whereby "substantial quantities of crude oil" would be purchased over a period of 10 to 20 years. Upwards of 100,000 bbl. daily may be involved in the Anglo-Iranian purchase negotiations.

In both the Arabian American and Anglo-Iranian deals, pipe-line construction to the Mediterranean will be of prime importance. Opinion differs as to whether a single big-inch or two or more big-inch lines will be constructed. At any rate, the movement of approximately 1,000,000 bbl. daily of Middle East crude to the Mediterranean is visioned sometime in the 1950's.

Iran also has a field, Gach Saran, where probable reserves are upwards of 4,000,000,000 bbl. Moreover, Anglo-Iranian has a 50 per cent interest with Gulf Exploration Corp. (subsidiary of Gulf Oil Corp.) in Kuwait where proved reserves of oil and condensate are approximately 10,000,000,000 bbl.

Current daily production in Arabia is 200,000 bbl.; in Iran, 422,000 bbl.; and in Kuwait, 40,000 bbl. On Bahrein Island whose production is owned by Bahrein Petroleum Co., Ltd., (California Standard and Texaco) the current daily output is 22,000 bbl. In all four countries plans are now actively under way for increased production. Last August, the first shipload of Middle East oil ever to reach the U. S. was brought here by Gulf. However, this was for test purposes and reportedly no further shipments here are planned.

In Iran, Russia is still awaiting parliamentary confirmation of the projected Russo-Iranian Oil Co., which would exploit northern Azerbaijan. This is the deal which Russia "forced down the throat" of Iran while Soviet troops, in direct violation of a wartime agreement, remained in that country. Indications are that Iran eventually will permit Russia to exploit the northern region, but it is possible that the terms will be altered. On January 7 a Teheran report stated the coalition was being formed in Iran to oppose Premier Ghavam's oil agreement with Russia, on the grounds that some Iranian politicians are opposed to the "sell out." As they now stand, Russia would control 51 per cent of the proposed company.

Whether American companies—notably Standard-Vacuum Oil Co., jointly owned by Jersey Standard and Socony-Vacuum—will again seek to obtain a concession in Iran is not now known and depends, in part, on how soon the U. S. State Department waves the "green light." Then, in view of the 10 to 20-year crude-oil-purchase negotiations under way with Anglo-Iranian, it is unlikely that Standard-Vacuum's need for crude oil is as urgent.

It is no secret that the British Government has

WORLD CRUDE-OIL PRODUCTION OUTSIDE THE UNITED STATES

Country—	Thousands of bbl. daily 1938	*1946
Canada	19.1	21.0
Mexico	104.9	129.0
Other	48.8	56.0
Total North America (outside of U.S.A.)	172.8	206.0
Argentina	46.8	62.0
Colombia	59.1	60.0
Peru	43.4	32.0
Venezuela	515.5	1,100.0
Other	6.8	8.0
Total South America	671.6	1,262.0
Austria	1.0	20.0
France	1.4	1.0
Germany	10.6	13.0
Hungary	1.0	15.0
Romania	132.5	85.0
U.S.S.R. including Sakhalin	572.0	*500.0
Other	13.0	8.0
Total Europe	731.5	642.0
Egypt	4.3	26.0
Total Africa	4.3	26.0
Bahrein-Arabia	24.1	425.0
India-Burma	27.5	9.0
Iraq	89.4	96.0
Iran	214.7	422.0
Kuwait	0.0	40.0
N.E.I.	157.0	35.0
Other	25.8	6.0
Total Asia	538.5	1,033.0
Total world (outside U.S.A.)	2,118.7	3,169.0

*Estimated production in late 1946.

been anxious for American oil interests to obtain a firmer foothold in the Middle East, a desire shared in by Arabian American, as current discussions to enlarge the partnership have been mutual by all four companies concerned.

Indications that the United Nations eventually will play a more prominent role in some phase of international oil operations have been evidenced during the past year. Now it is unofficially but authoritatively stated that the U.N. Economic and Social Council has been shown a program for a world oil agency under its aegis. Whether this is ever "reported out" may depend on the outcome of the proposed Anglo-American petroleum agreement, that is, whether this agreement is ratified by the U. S. Senate. Strong support for a U.N. oil agency has been voiced by the two leading U. S. State Department petroleum officials.

Oil production in Europe has taken an unplanned-for turn insofar as the rightful ownership of oil properties is concerned, in Austria, Hungary, and Romania. Russia continues to disagree with the terms of the Potsdam agreement and thus holds a 120,000-bbl. daily output here in her own hands. This is an output which competent petroleum engineers state is being produced contrary to the maximum efficient output, notably in Austria. At least one large U. S. oil company has about given up hope of regaining its prewar properties in these countries and is now trying to salvage what it can in the form of compensation. In the Central European countries at least nationalization has gained many adherents, with the consequent prospect of reverting to a postwar status extremely unlikely, in the Balkan countries at least.

With these uncertain conditions, coupled with the strong nationalistic movement in the Netherlands East Indies—where the Royal Dutch-Shell and Standard-Vacuum have large holdings—and in some Latin American countries, it is not difficult to understand why Middle East oil is destined to play an increasingly important role following World War II. Moreover, the recent fighting which broke out, early this month, in Sumatra's Palembang area only serves to heighten the fact that resumption of oil production and refining there probably will be charged with tension for some time to come.

Iraq Production Will Increase

Another Middle East country whose production will be materially increased as soon as additional pipe-line capacity is constructed, is Iraq. Here, through Iraq Petroleum Co., Ltd., Shell, Jersey Standard, Socony-Vacuum, Anglo-Iranian, and French oil interests, jointly operate the concessions. Current production of 96,000 bbl. daily in Iraq is slated to be stepped up to around 300,000 bbl. daily sometime before 1950. Moreover, the Iraq Petroleum affiliates, with holdings in Qatar, Syria, Palestine, Western Arabia, Cyprus, Trucial Coast, Omar, and Dhofar, and Trans-Jordan, are slated for significant production activities in the years immediately ahead. In Qatar the wells completed and plugged during the height of the war are being reconditioned. Others will be drilled. Geological and geophysical parties are operating elsewhere on Iraq Petroleum concessions outside of Iraq.

In Ethiopia, Sinclair Oil Corp. interests are still engaged in the exploratory stage. In Egypt, where daily production remains at approximately 26,000 bbl. daily, Standard Oil Co. of Egypt, S.A., (Jersey Standard affiliate) and Anglo-Egyptian Oilfields, Ltd., (Shell) are engaged, the latter in partnership with Socony-Vacuum on some projects, in additional wildcatting.

French oil interests, both governmental and private, have ambitious programs for next 10 to 15 years. In France, it is hoped to develop sufficient indigenous production to take care of all domestic refining needs, that is insofar as the French oil companies are concerned. Currently, the production is about 1,000 bbl. daily. By 1955 France hopes to be refining 250,000 bbl. daily. Before the war, France's 15 refineries had a yearly capacity of about 56,000,000 bbl., or about 155,000 bbl. daily.

The French colonies where wildcatting has just commenced include Gabon, French Equatorial Africa, Tunisia, Algeria, and French Morocco.

Wildcatting in Turkey and Burma is also on the upswing, with an American geophysical crew which recently landed in Burma and more rigs in Turkey. Turkey never has had commercial production, but the government is spending large sums of money to determine whether the country has indigenous crude. The Japanese wrought havoc with prewar Burmese production which was approximately 21,000 bbl. daily. Assam Oil Co., Ltd., a subsidiary of Burmah Oil Co., Ltd., is actively developing the Digboi field and reportedly has increased the prewar daily production here of 4,500 bbl. to upwards of 6,000 bbl. daily.

In China, ambitious plans call for the expenditure of large sums of money in the years immediately ahead. The present estimate of China's oil reserves (as given in detail in the December 28 issue of The Journal, in an article by Gustav Egloff) are 1,620,-600,000 bbl. Current daily production is approximately 1,000 bbl.

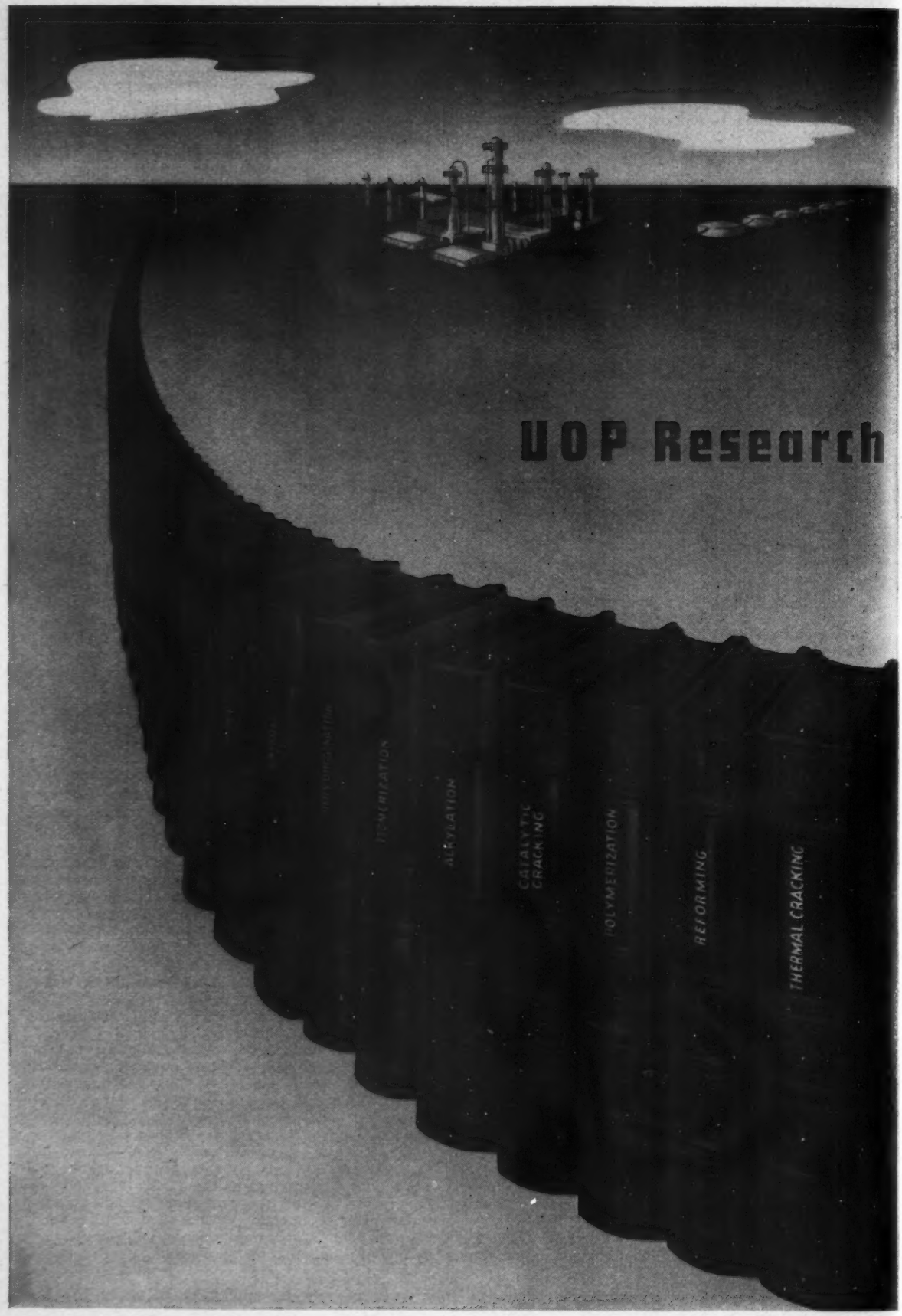
Japan Expanding Indigenous Output

In nearby Japan, the Japanese Government, at the suggestion of General MacArthur's headquarters, is engaged in a program to expand the indigenous output, which, before the war, amounted to approximately 3,600,000 bbl. yearly. Robert Grant, MacArthur's chief of mining and geological division, early this month stated that Allied geologists believe northwest Honshu has untapped reserves of around 14,000,000 bbl.

In New Guinea, several private companies—some operating jointly—as well as the Australian Government, are interested in developing oil there. Small production was brought in before the war but plugged when the Japanese threatened invasion.

In the Latin American oil-producing countries, the past year saw one notable increase. Venezuela's daily production soared from around 810,000 bbl. daily to 1,000,000 bbl. daily. Colombia's daily output reached 60,000 bbl. daily compared with 57,000 bbl. daily in 1945. Argentina, Trinidad, and Peru showed very little change. Argentina's 1946 daily output was 62,000 bbl. compared with 64,000 bbl. in 1945; Trinidad dropped from 59,000 to 55,000 bbl. And Peru's daily production was off from 38,000 bbl. daily in 1945 to about 32,000 bbl. last year.

Present indications are that Brazil and Paraguay may enter the ranks of world oil-producing countries this year or shortly thereafter. Chile has brought in three wells and closed them in due to lack of transportation. Development drilling there is being continued. Bolivia's Government oil-producing and refining program, slowed down by the political upheaval there last year, is now gaining momentum again with construction of the Camiri-Tintin crude pipe line as possibly the most significant oil activity at present. Meanwhile, development drilling and wildcatting are in progress. Current daily production in Bolivia is approximately 800 bbl.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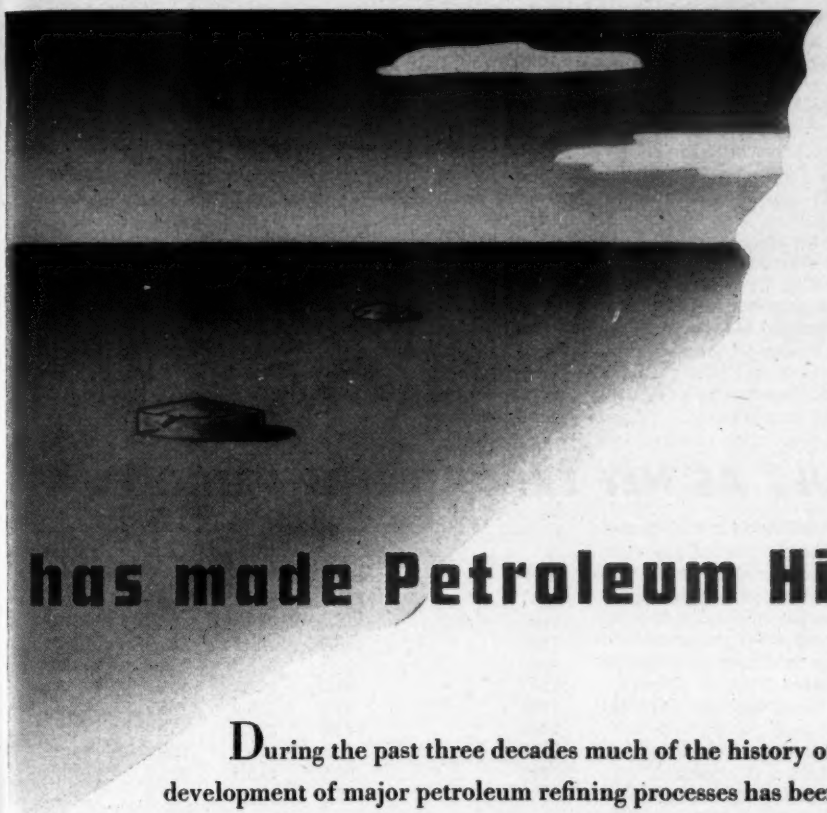

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Contingent upon passage of the proposed Guatemalan oil law, written largely by Max W. Thornburg, world oil consultant, exploratory work in this country may get under way late this year or early in 1948. Alaska is another country in the Western Hemisphere where 1947 results may be significant. Drilling on 1 Umiat has halted for the winter but the Navy, which is conducting operations on its Petroleum Reserve No. 4, plans to resume drilling early this year.

The greatest search for oil in the history of Canada is still under way. Meanwhile the daily production figures continue to slip with current production around 21,000 bbl. daily. In Mexico, much depends upon the new Aleman administration which apparently intends to put Petroleos Mexicanos (the Government oil monopoly) on a sound business basis. Mexico's current daily production is 129,000 bbl., a drop from 134,000 bbl. in 1945. Demand is presently beyond the government's ability to produce.

Looking at the world crude-oil production as a whole (exclusive of the United States) there is every indication that 1947's total daily output will exceed the 1946 daily figure of 2,930,000 bbl. by breaking the 3,000,000-bbl. daily mark.

Cost of Refinery Expansion

Well-informed estimates as to the amount which Jersey and Socony-Vacuum eventually will spend on new refinery construction to handle increased Middle East crude range from $600,000,000 upwards. This estimate was arrived at by assuming two Persian Gulf-Mediterranean pipe lines to be built with minimum capacity of 300,000 bbl. each and refinery construction costs at $1,000 per barrel. However, refinery developments are not slated to get under way until completion of pipe line or pipe lines. Estimated cost for a single pipe line ranges from $115,000,000 to $150,000,000.

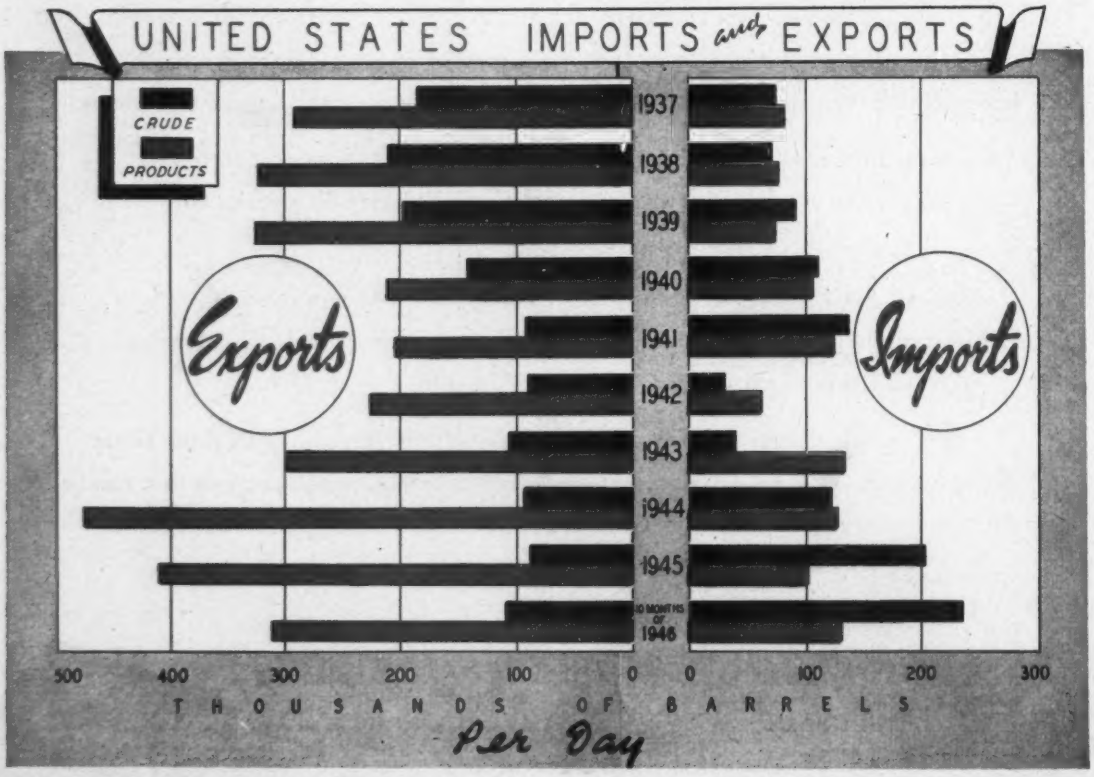
U. S. CONTINUES AS NET EXPORTER OF PETROLEUM

THE United States in 1946 continued to be a net exporter of petroleum although the margin over imports narrowed during the year and is much less than it was during most of the war period and prewar. The outstanding development of the past year was the decline in product exports from the two previous years and the increase in crude-oil imports to the highest levels in many years. Imports of petroleum products consisting largely of residual fuel oil also increased slightly in 1946.

During 1947 it is generally predicted that imports of crude oils will increase slightly with reduced imports of products. A small decline in total exports is in prospect, reflecting the strong competition of crude oil and products in foreign areas.

	Exports†		Imports†	
Year	Crude	Refined products	Crude	Refined products
1937	184.7	290.1	75.3	81.3
1938	212.2	320.4	72.4	76.4
1939	198.0	321.9	90.7	71.0
1940	141.1	215.8	116.6	112.2
1941	91.3	207.5	138.7	127.5
1942	93.0	228.2	33.7	64.8
1943	113.6	298.4	37.9	135.8
1944	94.1	476.3	122.4	129.7
1945	90.7	415.4	203.0	107.6
1946*	112.7	312.2	237.3	129.9

*First 10 months. †Thousands of barrels.



WORLD PRODUCTION

WIDESPREAD

PIPE-LINE EXPANSION

UNDER WAY

BY PAUL REED

THE large pipe-line construction of 1946 will be exceeded in 1947 when the industry will enter the most extensive activity of its history.

Total pipe-line construction during 1946 totaled 7,400 miles, consisting of 2,200 miles for crude-oil lines, 2,500 miles for products and 2,700 miles for natural gas. Projects definitely announced for 1947 and later in the United States total 9,672 miles include 3,753 miles of crude-oil lines, 1,557 miles for products, and 4,362 miles of natural gas.

The most conspicuous activity in 1946 was the laying of large products lines and the looping of existing natural-gas lines connecting southwestern fields with northern states. The scope of the 1947-48 programs will be broader and will include construction of a total of 1,718 miles of 20 and 22-in. crude-oil lines for increasing future deliveries to refineries in the Illinois-Indiana-Ohio-Michigan area. Plans have been made for a total of 1,232 miles of entirely new products systems and 3,254 miles of new natural-gas systems as well as 1,543 miles for looping present natural-gas trunk lines.

The 1946 products construction was mostly concentrated in Iowa, Minnesota, and the Dakotas where Great Lakes Pipe Line Co. and Standard Oil Co. (Indiana) projects totaled 1,262 miles; in the Michigan-Ohio-Pennsylvania area Sinclair Refining Co. and Socony-Vacuum Oil Co., Inc., laid a total of 800 miles. The laying of 276 miles of products line by Humble Pipe Line Co. in Texas in 1946 is the forerunner of extensive 1947 products line building in Texas by Magnolia Pipe Line Co., Texas Pipe Line Co., Sinclair Refining Co., and Shell Pipe Line Corp., totaling 700 miles. In the Rocky Mountain area a total of 632 miles will be laid by Wyco Pipe Line Co. and Phillips Petroleum Co.

Of much significance are the plans for 20-in. crude-oil systems and loops. Contracts have been recently let for 178 miles of 20-in. loops for Stanolind Pipe Line Co., the laying of which will start within 2 weeks; this job is a step in a program begun in 1946 for looping the entire 632 miles of the section of the company's system between Drumright, Okla., and Whiting, Ind. Pipe is scheduled to arrive in the second quarter of this year for the 650-mile, 20-in. Corsicana, Tex.-Patoka, Ill., crude-oil line of Magnolia Pipe Line Co. Work on Texas Pipe Line Co.'s 60-mile, 16-in. West Columbia-Houston crude-oil line is expected to start in May or June; this will be the first step in the Gulf Coast line program which will later include 80 miles of 22-in., Houston to Port Arthur-Port Neches line. Laying of Texas Pipe Line Co.'s 440-mile, 20-in. line from West Texas to Drumright, Okla., will not commence until September for completion and operation in 1948.

The whole pattern of natural-gas transmission is undergoing important changes. Between the early 1930's and the building of the Tennessee Gas & Transmission Co. system 1,265-mile, 24-in. line in 1944, no complete major long-distance systems were undertaken. The capacity of this system is being increased to 600,000,000 cu. ft. by the looping and compressor program planned for the future, extending through 1946-47 requiring 832 miles of loops.

For the West Texas-California 1,202-mile system

TABLE 1—MAJOR DOMESTIC CRUDE-OIL PROJECTS —1946 AND 1947

Company—	Miles	Inch	Status	Location
Pasotex P. L. Co.	103	10	Completed	West Texas
Sun P. L. Co.	130	8-10	Completed	Corpus Christi area
Atlantic P. L. Co.	50	8	Under way	West Texas
Standish P. L. Co.	289	12	Planned	Goldsmith, Borger, Tex.
Sohio Petroleum Co.	43	8	Completed	Mississippi
Magnolia P. L. Co.	37	10	Completed	West Texas
Magnolia P. L. Co.	650	20	Planned	Corsicana, Tex., to Patoka, Ill.
Standard Oil Co. of Calif.	176	18-20	Completed	San Joaquin Valley to San Francisco Bay
Stanolind P. L. Co.	54	8-14-18	Completed	Loops, Mo. and Ill.
Stanolind P. L. Co.	75	16	Planned	West Texas extension
Stanolind P. L. Co.	81-116	12-16	Planned	Loops between Casper, Wyo., and Freeman, Mo.
Stanolind P. L. Co.		12	Planned	Rangely, Colo., to Wamsutter, Wyo.
Stanolind P. L. Co.		10	Planned	Wamsutter to Casper, Wyo.
Stanolind P. L. Co.	148	20	Completed	Loops in Missouri
Stanolind P. L. Co.	484	20	Planned	To complete 632-mile looping, Drumright, Okla., to Whiting, Ind.
Phoenix P. L. Co.	600	8	Planned	Phoenix, Ariz., to Permian basin
Mid-Way P. L. Co.	600		Planned	Permian basin to Okla.-Kans.
Texas P. L. Co.	440	20	Planned	Midland, Tex., to Cushing, Okla.
Texas P. L. Co.	60	16	Planned	West Columbia to Houston
Texas P. L. Co.	80	22	Planned	Houston to Port Neches-Port Arthur

of El Paso Natural Gas Co., Southern California Gas Co., and Southern Counties Gas Co. preliminary work is under way. The first 30-in. pipe to be used for natural-gas trunk lines is being strung for the 214-mile California section. Transmission of gas from the vast Panhandle-Hugoton area will be augmented to an important extent when negotiations are completed to prepare for the 1,069-mile, 22 and 26-in. line of Michigan-Wisconsin Pipe Line Co. for which equipment has been ordered. In addition to serving the Michigan market, this system plans to lay a large system in Wisconsin, a state which heretofore has been deprived of extensive natural-gas distribution.

Market changes in the gas transmission picture will also occur if the government-owned Big Inch and Little Big Inch lines are acquired by interests which will use them for gas. This now appears probable. These lines are to be sold following bidding in February. At present these lines are being temporarily operated until April 30, by Tennessee Gas & Transmission Co. on a program to make scheduled deliveries in Ohio and Pennsylvania at the rate of 150,000,000 cu. ft. daily.

Provision for increased natural-gas deliveries is being made by the 1946-47 looping programs of Panhandle Eastern Pipe Line Co., 856 miles; Northern Natural Gas Co., 498 miles; Natural Gas Pipe Line Co. of America and Texoma Natural Gas Co., 141 miles; Mississippi River Fuel Corp. 265 miles, totaling 1,706 miles.

Foreign Construction

More foreign pipe-line construction is being planned than at any previous time. Work will be under way in the first quarter of this year for the 225-mile, 6-in. line of Yacimientos Petroliferos Fiscales Bolivianos in Bolivia and for the Socony-Vacuum Oil Co. of Venezuela 77-mile, 12-in. Oficina-Puerto la Cruz line in Venezuela; other projects in Venezuela are discussed. In Colombia, Tropical Oil Co. is planning to build 325 miles of products lines.

Laying of pipe for 600 miles of looping for Iraq Petroleum Co.'s system will be in progress this year. For Trans-Arabian Pipe Line Co., a survey party will be preparing for construction operations for a 1,050-mile, 28 and 30-in. line scheduled to start in the fall of 1948.

A period of large pipe-line building appears to be ahead. The industrial areas of the Great Lakes states need increasing crude-oil deliveries. Products pipe lines will inevitably be enormously extended to exploit the possibilities of these economical facilities. Recognition of the advantages of natural gas as a domestic and industrial fuel promises to greatly enlarge markets for which much pipe-line construction will be required.

TABLE 2—LARGE DOMESTIC PRODUCTS-LINE PROJECTS —1946 AND 1947

Company—	Miles	Inch	Status	Location
Socony-Vacuum Oil Co., Inc.	300	8-10-12	Completed	Pennsylvania
Cosden Petroleum Corp.	225	4	Planned	Big Spring to Weatherford, Tex.
Shell P. L. Corp.	100	6	Planned	Sheridan to Deer Park, Tex.
Warren Petroleum Corp.	82	6-8	Completed	Houston area
Standard Oil Co. (Indiana)	662	8-10	Under way	Joliet, Ill., to Moorhead, Minn., and Fargo, N. D.
Humble P. L. Co.	276	8	Completed	Baytown to Dallas-Fort Worth
Phillips Petroleum Co.	365	..	Planned	Borger to Denver
Phillips Petroleum Co.	75	12	Completed	Borger to Wichita
Great Lakes P. L. Co.	85	8	Completed	El Dorado to Humboldt, Kans.
Great Lakes P. L. Co.	205	8	Completed	Kansas City to Omaha
Great Lakes P. L. Co.	312	6-8	Completed	Minnesota to North Dakota
Sunray Oil Corp.-Wilcox Oil Co. feeder to Great Lakes P. L. Co.	83	8	Under way	Allen, Bristow, Drumright, Okla.
Wyco P. L. Co. (Standard of Ind., Texas Co. and Socony-Vacuum Oil Co., Inc.)	267	8	Planned	Casper, Cheyenne, Denver
Magnolia P. L. Co.	150	12	Planned	Spindletop to Hearne, Tex.
Texas P. L. Co.	150	10	Planned	Hearne to Dallas-Ft. Worth area
Texas P. L. Co.	50	6	Planned	Between Dallas and Ft. Worth
Sinclair Refining Co.	56	6	Completed	Toledo-Detroit
Sinclair Refining Co.	118	6	Completed	Toledo-Marion-Columbus
Sinclair Refining Co.	225	6	Completed	Marion, Cleveland, Akron, Youngstown
Sinclair Refining Co.	100	6	Completed	Steubenville to Columbus
Sinclair Refining Co.	250	6	Planned	Corpus Christi to Austin and San Antonio

TABLE 3—PRINCIPAL DOMESTIC NATURAL-GAS PROJECTS —1946 AND 1947

Company—	Miles	Inch	Status	Location
Panhandle Eastern P. L. Co.	856	18-26	1946-47 Programs Under way	Loops
Michigan-Wisconsin P. L. Co.	1,069	22-26	Planned	Hansford, Tex., to Big Rapids, Mich.
Cities Service Gas Co.	405	26	Planned	Hugoton to Kansas City
Cities Service Gas Co.	64	12	Completed	W. Edmond-Drumright, Okla.
Mid-Continent Gas Trans. Co.	400	26	Planned	Liberal, Kans., to Kansas City
Mid-Continent Gas Trans. Co.	438	22	Planned	Kansas City to St. Paul
New York State Nat. Gas Co.	155	12-16	Planned	Pennsylvania
Natural Gas P. L. Co. of America and Texoma Nat. Gas Co.	141	24-26	Planned	Loops
Colorado Interstate Gas Co.	300	20	Planned	Hugoton to Denver
Pacific Public Service Co.	395	6-12	Completed	Kettleman Hills to San Francisco
Ohio Fuel Gas Co.	88	16	Planned	Ohio
Mississippi River Fuel Corp.	265	22	Under way	Loops
Tennessee G. & T. Co.	832	20-26	Under way	Loops
Tennessee G. & T. Co.	400	26	Pily. comp.	San Salvador, Tex., feeder line
Hope Natural Gas Co.	75	12-20	Planned	Loops
Southern Natural Gas Co.	138	20-22	Planned	Chattanooga to Lexington, Miss.
Southern Natural Gas Co.	80	16	Completed	Gwinville, Miss.
Reynosa P. L. Co.	30	14	Planned	Hidalgo Co. to Reynosa, Tex.
Gas Industrial S. A.	135	14	Planned	Reynosa, Tex., to Monterrey, Mexico
El Paso Natural Gas Co.	968	24-26	Planned	West Texas to Blythe, Calif.
Southern Calif. Gas Co. and Southern Counties Gas Co.	214	30	Under way	Blythe to Los Angeles
East Ohio Gas Co.	144	16-20	Completed	Ohio
Cincinnati Gas Co.	70	14	Completed	Means to Foster, Ky.
Lone Star Gas Co.	79	14	Completed	Carthage to Opelika, Tex.
Northern Natural Gas Co.	498	12-24	Under way	Loops

Natural Gas

by Dahl M. Duff

STEADY EXPANSION TO CONTINUE IN 1947

THE natural-gas industry experienced an active and prosperous, though somewhat troubled, year in 1946.

Revenues, sales, customers, and production of the natural-gas industry all showed gains, but the amount of these increases was considered relatively insignificant compared to the promise of the future.

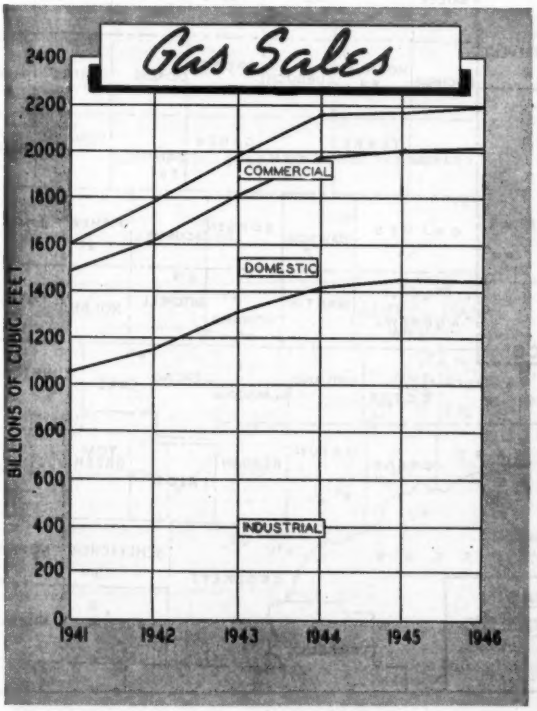
More and more customers, from small-home owners to major industrial plants, were turning to gas as a fuel because of its cleanliness, convenience, and reliability. Labor difficulties in the coal fields during 1946 intensified demand for gas fuel, although the industry's expansion in general rested on a more substantial basis.

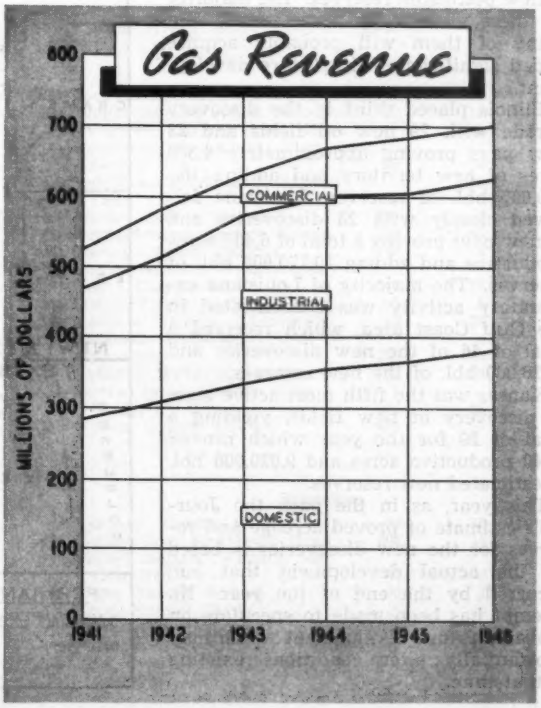
Gas-industry expansion during 1946 was hampered by lack of materials and to some extent, by an uncertain regulatory outlook. However, a number of important transmission projects were under way at year's end, and many more were proposed.

An indication of current growth of the natural-gas industry was given by a Federal Power Commission summary which showed that projects approved in the 15-month period ended September 30, 1946, would add 4,465 miles in new lines. Completion of these projects alone would increase gas supply some 400,000,000,000 cu. ft. annually—nearly 20 per cent of total sales in 1945.

Natural gas during 1946 took on added importance from an economic standpoint. Demands for higher well-head price was reflected in the Oklahoma Corporation Commission's order fixing 7 cents per 1,000 cu. ft. as the minimum price for Oklahoma Panhandle gas. Chemical-plant uses of gas, though a fraction of the fuel total, continued to grow. Scientists and economists saw natural-gas reserves as adding possibly 15,000,000,000 bbl. to the nation's oil reserves through use of the adapted Fischer-Tropsch process. Regulatory bodies of several states, particularly Texas, showed their determination to halt flaring of oil-well gas.

Leaders of the natural-gas industry became increasingly alarmed at the widening powers of the Federal Power Commission. Court decisions upheld several orders of the commission regulating production and end use, and 1947 promised to see strong pressure for amendments to the Natural Gas Act.





NEW RESERVES

Discoveries, New Pays, and Extensions In 1946, Their Size, and Where Located

NEARLY 500 new oil pools were discovered in the United States during 1946, proving approximately 45,000 acres productive of petroleum and adding nearly 150,000,000 bbl. of oil to the nation's proved reserves. The Journal's statistical tabulation indicates that 301 new oil reservoirs were discovered during the year and that there were 190 new pools proved by development of production from new pay formations in previously productive fields. New pays are actually new pools in older fields according to present classification systems and are treated, therefore, as discoveries.

Texas led all other states with 118 new oil discoveries and 69 new pays in older fields. The 187 new pays and new discoveries combined proved approximately 17,000 acres productive and added 43,490,000 bbl. to the proved petroleum reserves of that state.

The largest amount of newly proved acreage, 4,640 acres, occurred in the North Central Texas area and was responsible for 14,020,000 bbl. of the new reserves. The Upper Gulf Coast placed second with 4,420 acres, and was closely followed by West Texas with 3,320 acres and the Lower Gulf Coast with 2,880 acres.

Oklahoma is credited with 48 new oil discoveries and 27 new oil pays. These combined proved approximately 7,380 acres and accounted for 22,580,000 bbl. of new petroleum reserves. The majority of these discoveries were small, but many of them will probably acquire added significance with future development.

Illinois placed third in the discovery parade with 29 new oil fields and 28 new pays proving approximately 4,300 acres of new territory and adding 15,030,000 bbl. of reserves. Louisiana followed closely with 23 discoveries and 30 new pays proving a total of 6,400 acres productive and adding 10,770,000 bbl. of reserves. The majority of Louisiana exploratory activity was concentrated in the Gulf Coast area, which received a total of 46 of the new discoveries and 8,920,000 bbl. of the new reserves.

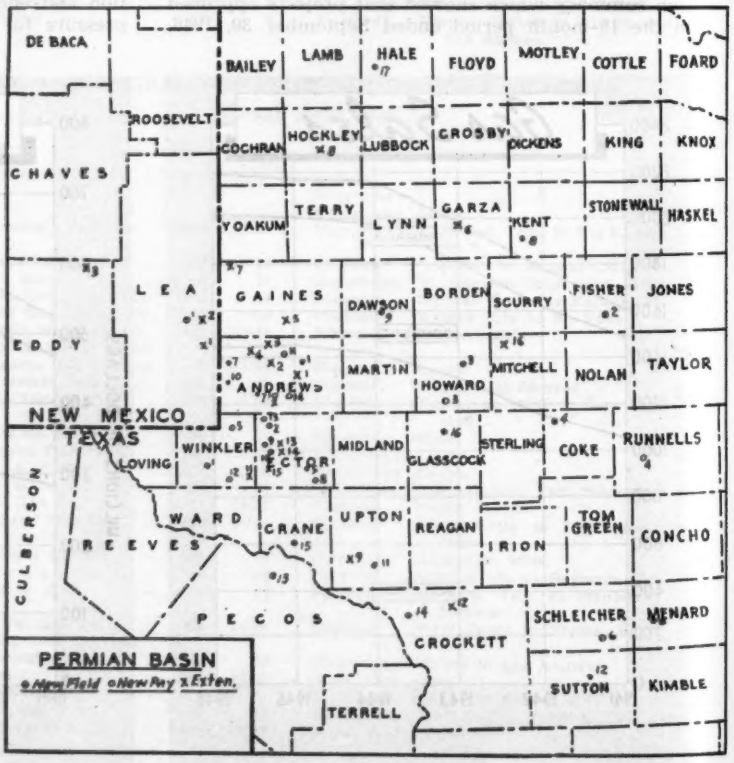
Kansas was the fifth most active state in discovery of new fields, yielding a total of 29 for the year which proved 3,740 productive acres and 9,020,000 bbl. of estimated new reserves.

This year, as in the past, the Journal's estimate of proved acreage and reserves for the new discoveries is based on the actual development that had occurred by the end of the year. No attempt has been made to speculate on probable future development which may substantially alter conditions existing at that time.

WEST TEXAS

Discoveries

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
(1) Block 12, Andrews; Clear Fork	760	80	3,040
(2) Huddleston, Fisher; Palo Pinto	40	60	40
(3) Fairview, Howard; Clear Fork	40	51	100
(4) Jameson, Coke; Pennsylvanian	40	20	100
(5) Kayser, Ector; Pennsylvanian	40	30	100
(6) Morrow, Menard; Canyon	40	53	100
(7) Nelson, Andrews; Ellenburger	40	222	240
(8) Polar, Kent; Ellenburger	40	35	120
(9) Spraberry, Dawson; San Andres	40	75	100
(10) Sims, Andrews County; Ellenburger	80	65	640
(11) Unnamed, Upton; Grayburg	40	84	100
(12) Unnamed, Sutton; Strawn (gas)	....	....	.....
(13) Unnamed, Pecos; Yates	40	20	60
(14) Unnamed, Crockett; Glorietta	80	18	400
(15) Unnamed, Crane; Waddell (distillate)	40	20	60
(16) Clark, Glasscock; Chapel	80	15	200
(17) Irish, Hale; Clear Fork	40	20	100
Total	1,480		5,500



New Pays

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
(1) Emperor Deep, Winkler; Holt	120	45	600
(2) Goldsmith, Ector; Clear Fork	160	185	800
(3) Howard - Glasscock, Howard Strawn	240	90	960
(4) Huddleston, Runnels; Canyon	40	28	68
(5) Keystone, Winkler; Devonian	160	90	1,280
(6) Page, Schleicher; Strawn	120	80	400
(7) Martin, Andrews; Ellenburger	360	15	3,240
(8) Penwell, Ector; Ellenburger	40	30	240
(9) TXL, Ector; Clear Fork	40	15	120
(10) TXL, Ector; Wolfcamp	40	50	150
(11) Fullerton, Andrews; Ellenburger	160	50	1,600
(12) Monahans, Winkler; Glorietta	160	44	800
(13) North Goldsmith, Ector; Devonian	160	36	960
(14) Fuhrman, Andrews; Ellenburger	40	10	200
Total	1,840		11,410

Extensions

(1) Block 12, Andrews; Clear Fork	760	80	(*)
(2) Fullerton, Andrews; Clear Fork			
(3) Fullerton, Andrews; Clear Fork	560	12	2,240
(4) Fullerton, Andrews; Devonian	440	150	3,080
(5) Doss, Gaines; Clear Fork	40	60	120
(6) Garza, Garza; lime	80	....	300
(7) Jones Ranch; Gaines; Devonian	40	73	200
(8) Levelland, Hockley; San Andres	40	97	120
(9) McCamey, Upton; Yates	40	68	100
(10) Martin, Andrews; Ellenburger	40	110	(†)
(11) Sealy Smith, Winkler; Glorietta	120	60	500
(12) Shannon, Crockett; lime	40	23	80
(13) TXL, Ector; Ellenburger			
(14) TXL, Ector; Ellenburger	360	100	3,600
(15) TXL, Ector; Devonian	160	53	1,120
(16) Westbrook, Mitchell; Clear Fork	40	91	100
Total	2,760		11,560

*See discoveries. †See new pays.

SOUTHEAST NEW MEXICO

New Pays

(1) Skaggs, Lea; Clear Fork	40	80	100

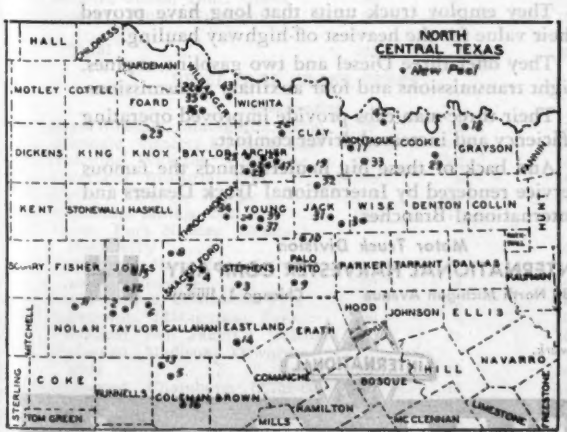
Extensions

(1) Drinkard, Lea; Glorietta	160	40	960
(2) Penrose-Skelly, Lea; lime	240	10	1,200
(3) South High Lonesome, Eddy; Grayburg	120	45	480
Total	520		2,640

NORTH AND WEST CENTRAL TEXAS

Discoveries

(1) Ingram, Taylor; Hope	40	1	30
(2) Murphree, Taylor; Cook	40	7	80



NORTH AND WEST CENTRAL TEXAS (Continued)

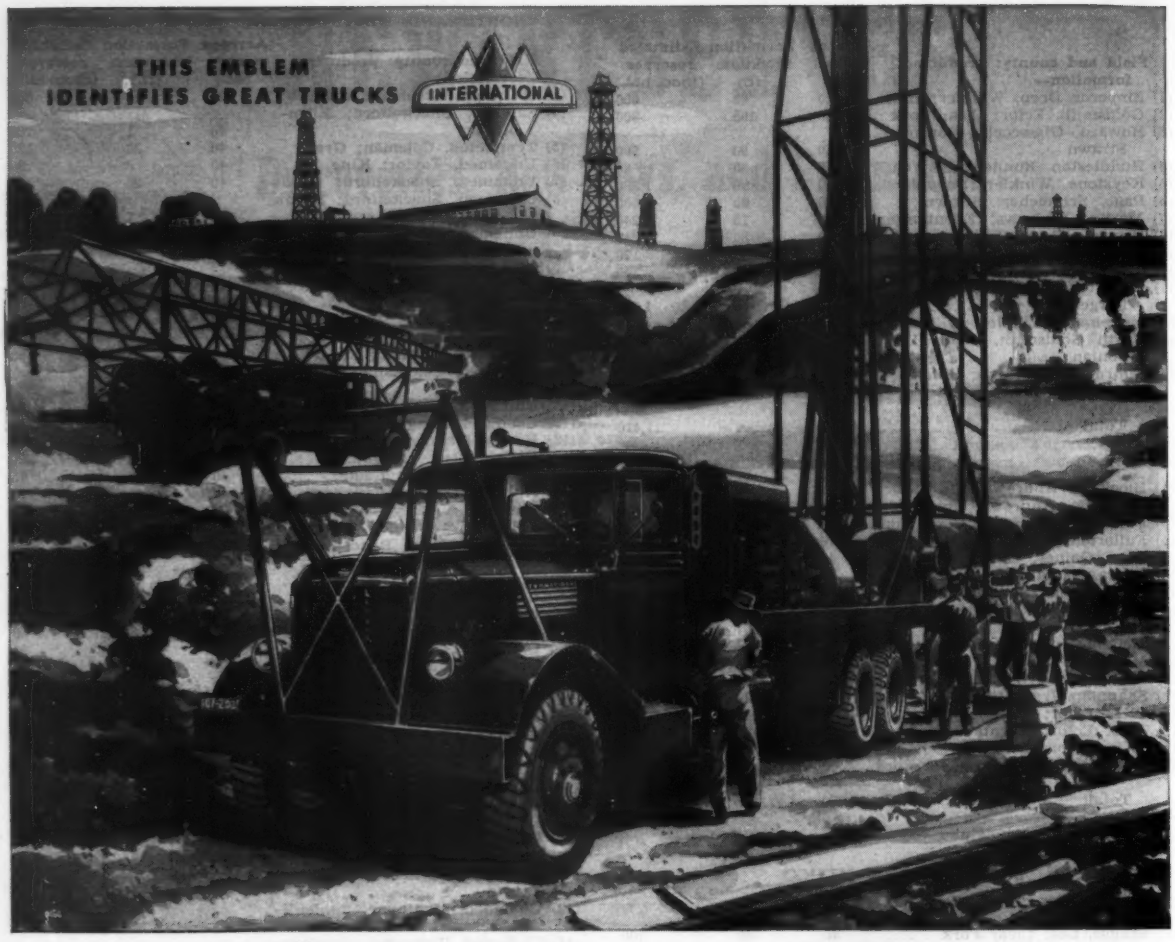
Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
(3) O'Conner, Stephens; Caddo	120	14	600
(4) Sanders, Shackelford; Ellenburger	40	1	160
(5) Templeton, Coleman; Gray	40	30	120
(6) Unnamed, Taylor; King	40	8	80
(7) Unnamed, Shackelford; Caddo	40	20	100
(8) Unnamed, Shackelford; Saddle Creek	40	7	60
(9) Unnamed, Palo Pinto; Marble Falls	80	9	320
(10) Unnamed, Palo Pinto; Ellenburger	40	10	100
(11) Unnamed, Nolan; Strawn	40	11	80
(12) Unnamed, Jones; Flippen	80	11	240
(13) Unnamed, Jones; Swastika	40	7	60
(14) Unnamed, Eastland; Strawn	40	3	50
(15) Unnamed, Coleman; Gardner (gas)	160	8	.....
(16) Unnamed, Coleman; Fry	40	11	70
(17) Caudle, Montague; Caddo	40	10	60
(18) Hanby, Grayson; Strawn	40	32	100
(19) Heard, Clay; Ellenburger	80	28	320
(20) Kendall, Young; Caddo	40	15	75
(21) Killiam, Young; Mississippi	40	15	75
(22) National Victory, Wilbarger; Canyon	800	13	5,000
(23) Truscott, Knox; Bend	40	24	60
(24) Unnamed, Archer; Cisco	40	6	50
(25) Unnamed, Archer; Cisco	40	8	50
(26) Unnamed, Archer, Caddo	40	5	30
(27) Unnamed, Archer; Cisco	40	4	80
(28) Unnamed, Archer; Cisco	40	6	60
(29) Unnamed, Cooke; unidentified	40	8	50
(30) Unnamed, Jack; Bend (gas)	160	11	.....
(31) Unnamed, Jack; Bend (gas)	40	13	.....
(32) Unnamed, Jack; Bend	40	13	100
(33) Unnamed, Jack; Ellenburger	40	8	60
(34) Unnamed, Throckmorton; Caddo	40	5	40
(35) Unnamed, Wilbarger; Ellenburger	40	14	80
(36) Unnamed, Wilbarger; Canyon	40	70	100
(37) Unnamed, Young; Caddo	40	3	40
(38) Unnamed, Young; Mississippi	40	15	80
(39) Unnamed, Young; Strawn	40	14	60
(40) Unnamed, Eastland; Lake	40	15	40
(41) Unnamed, Archer; unidentified sand	40	4	20
(42) Unnamed, Montague; unidentified sand	40	20	40
(43) Unnamed, Wilbarger; conglomerate	40	17	60
Total	2,920		8,880

New Pays

(1) Cooper-Roberts, Jones; Swastika	40	4	40
(2) Cooper-Roberts, Jones; Gunsight	40	13	60
(3) Murphree, Taylor; Upper Hope	40	4	40
(4) Sedgwick, Shackelford; Ellenburger	40	9	100
(5) Sedgwick, Shackelford; Marble Falls	40	10	60
(6) Almon, Cooke; Strawn	120	8	500
(7) Burns-Benson, Archer; Caddo	80	25	240
(8) Garvey, Young; Strawn	40	8	60
(9) Hanby, Grayson; Trinity (gas)	....	....	.....
(10) Heard, Clay; Caddo	40	10	50
(11) Logan, Young; Caddo	40	5	30
(12) Madden, Wichita; Ellenburger	40	20	80
(13) National, Wilbarger; Rock Crossing	240	13	600
(14) National, Wilbarger; Caddo	40	23	80
(15) Sivells Bend, Cooke; Ellenburger	200	35	700
(16) Wilson, Cooke; Strawn	680	10	2,500
Total	1,720		5,140

Extensions

(1) Asylum, Wichita; limestone	40	10	40
(2) Belcherville, Montague; Bend	200	15	500
(3) Clara-Texhoma, Wichita; unidentified	40	8	60
(4) Knox, Young; Strawn	40	7	50
(5) Knox, Young; Caddo	40	20	100
(6) Parrott, Throckmorton; Caddo	40	5	50
(7) Woodson, Throckmorton; Caddo	40	16	80
(8) Bluff Creek, Shackelford; Bluff Creek	40	5	60



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INTERNATIONAL *Trucks*

NORTH AND WEST CENTRAL TEXAS (Continued)

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
(9) Crosscutt, Brown; Ellenburger	80	15	200
(10) Nugent, Jones; Bluff Creek	80	10	150
(11) Nugent, Jones; Gunsight	80	3	100
Total	720		1,390

UPPER GULF COAST, TEXAS

Discoveries

(1) East Blessing, Matagorda; Frio	80	14	80
(2) Glendale, Trinity; Edwards lime	160	40	160
(3) Hutchins, Wharton; Oligocene	160	32	160
(4) Liverpool, Brazoria; Frio	80	5	160
(5) McCoy, Liberty; Wilcox	240	21	240
(6) Midfields, Matagorda; Frio	160	12	240
(7) North Port Neches, Orange; Hackberry	80	4	160
(8) Northwest Hamshire, Jefferson; Hackberry	80	8	160
(9) South Mayes, Chambers; Frio	80	6	80
(10) Tidehaven, Matagorda; Frio	80	6	80
(11) Unnamed, San Jacinto; Wilcox	160	35	160
(12) Unnamed, Madison; Edwards lime	160	15	160
(13) Unnamed, Chambers; (8,752-66)	40	16	120
Total	1,560		1,960

New Pays

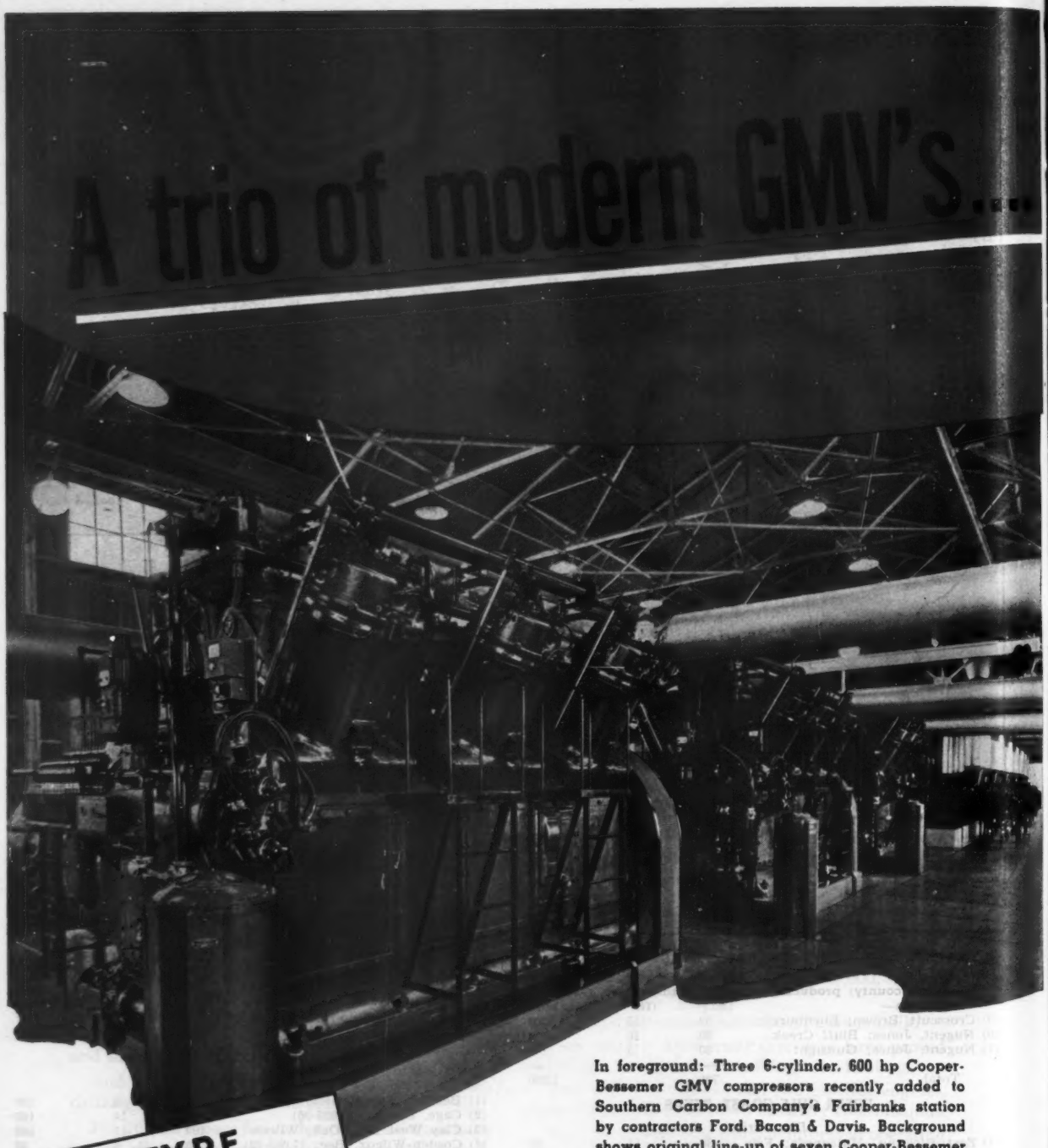
Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
(1) Blessing, Matagorda; Frio	160	12	160
(2) Blue Lake, Brazoria; Frio (2)	200	54	300
(3) Caplan, Galveston; Miocene	40	4	40
(4) Cedar Point, Chambers; Miocene (2)	80	14	160
(5) McCoy, Liberty; Wilcox (Quinn)	80	6	80
(6) Midfields, Matagorda; Frio	160	9	240
(7) Hull, Liberty; Middle Yegua	40	18	80
(8) Lane City, Wharton; Marginulina	40	8	40
(9) Lovell Lake, Jefferson; Frio	160	10	160
(10) Tidehaven, Matagorda; Frio	160	16	160
(11) Needville, Fort Bend; Frio	40	3	60
(12) Saratoga, Hardin; Yegua	40	14	60
(13) Sour Lake, Hardin; Yegua	40	10	80
(14) South Liberty, Liberty; Upper Frio-Cook Mountain	80	40	160
(15) Stratton Ridge, Brazoria; (4,567-86)	40	19	80
(16) Sugar Valley, Matagorda; Frio (3)	480	31	480
(17) Tomball, Harris; Cockfield	160	13	160
(18) West Columbia, Brazoria; Frio	40	16	120
(19) West Silsbee, Hardin; Yegua	80	4	80
(20) Altair, Colorado; (10,174-92)	160	18	320
Total	2,280		3,020

LOWER GULF COAST, TEXAS

Discoveries

(1) Beasley, San Patricio; (4,900-08)	160	8	160
(2) Cage, Brooks; (8,022-36)	160	14	160
(3) Clay West, Live Oak; Wilcox	160	11	160
(4) Cosden-Wilcox, Bee; (7,066-72)	80	6	80
(5) East Falfurrias, Jim Wells; (9,040)	160	24	160
(6) East Taft, San Patricio; (5,600-07)	40	5	40
(7) Gyp Hill, Brooks; Lower Frio	40	5	40
(8) Oakville-Wilcox, Live Oak; Wilcox	40	21	40
(9) Poehler, Goliad; Wilcox	240	4	240
(10) Sliva, Bee; Stillwell	80	11	40
(11) Strauch-Wilcox, Bee; Luling	160	58	160
(12) Welder Ranch; Victoria; Frio	160	20	160
(13) West Magnolia City; Jim Wells; Frio	40	12	40
(14) Unnamed, Willacy; (7,540-60)	40	20	40
(15) Unnamed, Goliad; (10,670-77)	80	7	80
(16) Lagarto, Live Oak (5,580-85)	40	5	60
(17) Landa, Hidalgo; (8,390-96)	160	6	160

A trio of modern GMV's....



In foreground: Three 6-cylinder, 600 hp Cooper-Bessemer GMV compressors recently added to Southern Carbon Company's Fairbanks station by contractors Ford, Bacon & Davis. Background shows original line-up of seven Cooper-Bessemer horizontals, now in their eighth year of service. Station also has four Cooper-Bessemer Type GAW gas engines driving 100 KW AC generators for auxiliary power service.

TYPE GMV ANGLE Compressors

New York Washington Bradford, Pa. Parkersburg, W. Va. San Francisco, Cal. Seattle, Wash. Shreveport

LOWER GULF COAST TEXAS (Continued)

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
(18) Round Lake, San Patricio; (5,442-56)	40	12	60
(19) Schwartz, Live Oak; (4,016-19)	40	5	60
(20) Unnamed, Kleberg; (10,225-51)	160	26	160
Total	2,080		2,100
New Pays			
(1) Dan Sullivan, Brooks; (10,155)	160	43	160
(2) Falls City, Karnes; Government Wells	40	8	40
(3) Los Indios, Hidalgo; Frio	160	28	160
(4) Midway, San Patricio; Frio	40	23	80
Midway, San Patricio; (5,680-86)	40	6	80
(5) North Minnie Bock, Nueces; Frio, (7,877-81), (5,994-6,004)	160	42	320
(6) Saxet, Nueces; Frio	40	10	80
(7) Willamar, Willacy; Eocene	40	2	40
(8) Yoakum, DeWitt; Wilcox	40	2	40
(9) West Sinton, San Patricio; (3,460-68)	40	8	80
(10) Cabeza Creek, Goliad; Pettus	40	5	80
Total	800		1,160
Extensions			
(10) Sliva, Bee; Stillwell	160	3	160

SOUTH CENTRAL TEXAS

Discoveries			
(1) Carrizo Park, Dimmit; (2,795-2,807)	40	12	40
(2) Fashing, Atascosa; Wilcox	160	6	240
(3) Holcomb, Milam; Austin chalk	40	20	40
(4) Muil, Atascosa; Edwards lime	240	42	240
(5) Rosilla Creek, Bexar; Navarro	40	5	40
(6) Willow Flat, Milam; Nacatoch	40	16	60
(7) Unnamed, Atascosa; Upper Edwards lime			
(8) Unnamed, McMullen; (1,379-90)	40	11	40
Total	600		700

SOUTH TEXAS

Discoveries			
(1) Holland (Cortez), Starr; (2,961-67)	40	6	60
(2) North Albercas, Webb; Jackson sand	40	5	40

SOUTH TEXAS (Continued)

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
(3) North Peters, Duval; (2,092-98)	40	6	40
(4) South Rincon, Starr; (3,500-04)	40	4	40
(5) Unnamed, Webb; (1,872-74)	40	2	40
(6) Unnamed, Starr; (5,961-67)	40	6	80
Total	240		300
New Pays			
(1) Kelsey, Starr; (5,706-18)	40	12	80
(2) La Reforma, Starr; Yegua	40	50	80
(3) Piedras Pintas, Duval; Yegua	40	34	100
Total	120		260
Extensions			
(1) North Sun, Starr; (4,730)	40	2	40

SOUTH LOUISIANA

Discoveries			
(1) Bayou la Fleur, Jefferson; Miocene	200	6	600
(2) Big Point area, St. Tammany; Miocene	160	31	320
(3) Bilbo, Beauregard; Cockfield	80	6	80
(4) Bon Air, Jefferson Davis; Marginulina	400	12	800
(5) Choupique, Calcasieu; Miocene	80	6	80
(6) College Point area, St. James; Oligocene	80	23	160
(7) Queen Bess Island (East Barataria Bay), Jefferson; Miocene	160	10	160
(8) Hahnville Prospect, St. Charles; Miocene	40	16	40
(9) Johnson's Bayou area, Cameron; Miocene	160	4	160
(10) Little Temple, LaFourche; Miocene	40	4	40
(11) Mamou, Evangeline; Wilcox	320	43	640
(12) New Iberia, Iberia; Miocene	240	5	240
(13) North Oretta, Beauregard; Cockfield	40	18	40
(14) Singer, Beauregard; Cockfield	80	11	80
(15) South Oberlin, Allen; Wilcox	80	15	80
(16) Alliance, Plaquemines; Miocene	160	10	160
(17) Longville (Seale), Beauregard; Cockfield	40	17	80
Total	2,360		3,760

SOUTH LOUISIANA (Continued)

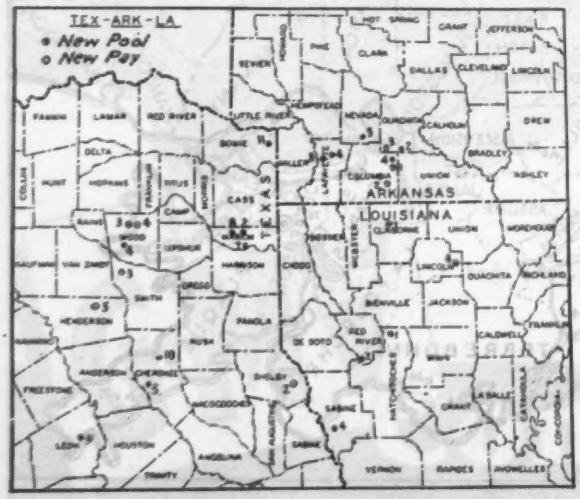
New Pays

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
(1) Bayou la Fleur, Plaquemines; Miocene	80	5	160
(2) Avery Island, Iberia; Miocene	80	10	160
(3) Bayou Mallet, Acadia; Miocene	160	24	160
(4) Belle Isle, St. Mary; Miocene	40	24	40
(5) Black Bayou, Cameron; Miocene	40	30	80
(6) Cameron Meadows, Cameron; Miocene	160	16	160
(7) Charenton, St. Mary; Miocene	40	10	80
(8) Dog Lake, Terrebonne; Vicksburg	80	13	160
(9) Egan, Acadia; Vicksburg-Frio	160	43	320
(10) Good Hope, St. Charles; Miocene	80	6	160
(11) Mamou, Evangeline; Wilcox	80	10	200
(12) New Iberia, Iberia; Miocene-Oligocene	160	16	400
(13) La Pice, St. James; Miocene	80	13	160
(14) Iowa, Calcasieu; Miocene (5,000 and 5,100)	80	16	80
(15) Lake Mongoulois, St. Martin; Oligocene	80	38	160
(16) North Cankton, Lafayette; Miocene	80	50	80
(17) North Elton, Allen; Frio	160	2	160
(18) Oretta, Beauregard; Cockfield	160	16	160
(19) Port Barre, St. Landry; Miocene (2)	160	38	160
(20) South Elton, Jefferson Davis; Oligocene	160	20	160
(21) Mud Lake, Cameron; Miocene	160	10	160
(22) Venice, Plaquemines; Miocene (3)	320	26	500
(23) Week's Island, Iberia; Miocene	80	15	400
(24) White Castle, Iberville; Miocene	40	10	100
(25) Bayou Des Glaise, Iberville Parish; Miocene	160	10	160
(26) Lafitte, Jefferson; Miocene	40	11	100
(27) Lake Pelto, Terrebonne; Miocene	160	18	160
(28) Lapeyrouse, Terrebonne; Miocene	160	8	160
(29) North Richie, Acadia; Miocene	40	5	120
Total	3,280		5,060

EAST TEXAS

Discoveries

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
(1) Furrh, Harrison; sand (gas)	....	14	.....
(2) Lassater, Marion; Travis Peak	80	9	240
(3) Mount Sylvan, Smith; Paluxy	80	13	300
(4) Norman Paul, Wood; Woodbine	40	30	160
(5) William R. Wise, Cherokee; Woodbine	200	9	800
(6) Unnamed, Rusk; Travis Peak (distillate)	40	154	80



EAST TEXAS (Continued)

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
(7) Unnamed, Marion; Hill (gas)	....	10	.....
(8) Unnamed, Marion; Lower Pettit	40	12	160
(9) Unnamed, Leon; Woodbine (gas)	....	10	.....
(10) Unnamed, Cherokee; Woodbine	40	3	160
(11) Unnamed, Bowie; Smackover	80	55	320
Total	600		2,220

New Pays

(1) Carthage, Panola; Lower Pettit	40	74	160
(2) Huxley, Shelby; Pettit (distillate)	40	22	80
(3) Manziel, Wood; Sub-Clarksville	40	20	120
(4) Manziel, Wood; Woodbine	40	6	160
(5) Opelika, Henderson; Rodessa	40	26	160
(6) Waskom, Harrison; unidentified	40	13	160
Total	240		840

Extensions

(1) Fairfield, Freestone; Woodbine (distillate)	40	10	80

NORTH LOUISIANA

Discoveries

(1) Ashland, Natchitoches; Eagleford	120	6	360
(5) Plain Dealing, Bossier; Tokio	40	37	120
(6) Unnamed, Lincoln; Cotton Valley-Bodcaw	160	47	320
Miscellaneous*	120	....	50
Total	440		850

*Includes (2) Lake End, Red River; (3) Morringsport, Caddo; (4) Negreet, Sabine.

New Pays

(1) Haynesville, Claiborne; Cotton Valley	320	187	1,000
Total	320		1,000

ARKANSAS

Discoveries

(1) Lewisville, West, Lafayette; Glen Rose	80	15	450
(3) Spirit Lake, Lafayette; Glen Rose	120	18	500
Miscellaneous*	80	....	150
Total	280		1,100

*Includes (2) Pace City, Ouachita; (4) Unnamed, Nevada.

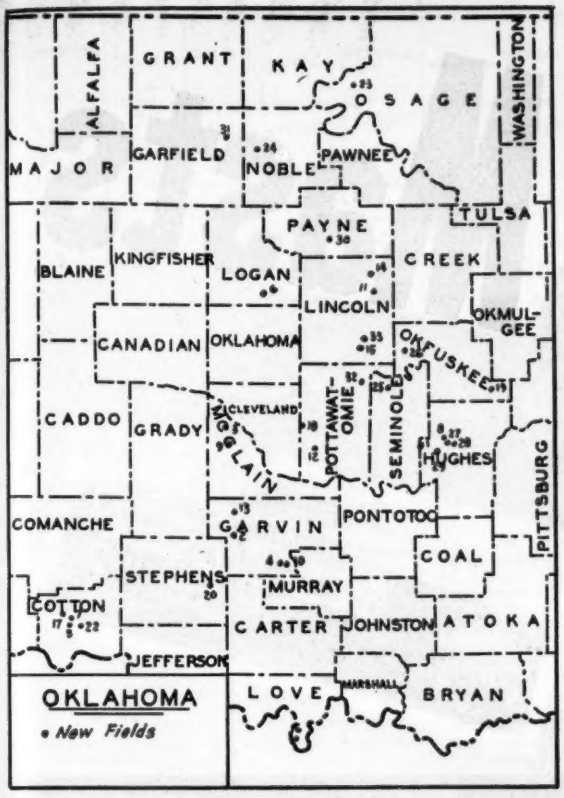
New Pays

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
Village, Columbia;			
Cotton Valley	160	14	400
Travis Peak	120	18	450
Smackover	360	2	1,300
Wesson, Ouachita;			
Travis Peak	280	14	1,000
James lime	160	16	350
Nacatoch	40	4	160
Champagnolle, Union; Smackover	40	10	240
Total	1,160		5,000

OKLAHOMA

Discoveries

(1) Adams, Northwest, Hughes; Gilcrease	80	10	240
(2) Antioch, Southwest, Garvin; Pennsylvanian sand	480	29	2,400
(3) Blue Hill, McClain; Hunton	80	75	160
(4) Butterly, Northeast, Garvin; Oil Creek	160	96	800
(5) Cache Creek, Cotton; sand	1,040	26	2,080
(6) Coon Creek, Logan; 2nd Wilcox	160	12	480
(7) Essaquanahdale, Cotton; sand	280	8	560
(8) Grief Creek, Hughes; Upper Booch	80	20	240
(9) Iron Chapel, McClain; Bromide	40	87	160
(10) Katie, Garvin; Hoxbar	40	24	160



OKLAHOMA (Continued)

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
(11) Kendrick, East, Lincoln; Bartlesville	120	8	360
(12) Macomb, Southeast, Pottawatomie; Booch	200	17	500
(13) Maysville, Southwest, Garvin; Pennsylvanian	120	5	1,200
(14) Parkland, East, Lincoln; Prue	120	38	240
(15) Robinson Creek, Lincoln; Wilcox	80	10	320
(16) Sivells Bend, Love; sand	100	13	200
(17) Soldier Creek, Cotton; sand	1,500	23	4,500
(18) Tribbey, North, Pottawatomie; 2nd Wilcox	120	2	480
Miscellaneous*	1,500	....	4,500
Total	6,300		19,850

*Includes (19) Alabama, West, Okfuskee; (20) Alma, North, Stephens; (21) Altus, Northeast, Jackson; (22) Cache Creek, East, Cotton; (23) Drum Creek, Osage; (24) Fourdee, Noble; (25) Gar Creek, Seminole; (26) Garden Grove, Okfuskee; (27) Holdenville, Hughes; (28) Holdenville, East, Hughes; (29) Jefferson, North, Hughes; (30) Mehan, Northwest, Payne; (31) Spring Valley, Southeast, Garfield; (32) Victory Hill, Pottawatomie; (33) Wilzetta, Northwest, Lincoln; and 15 unnamed fields.

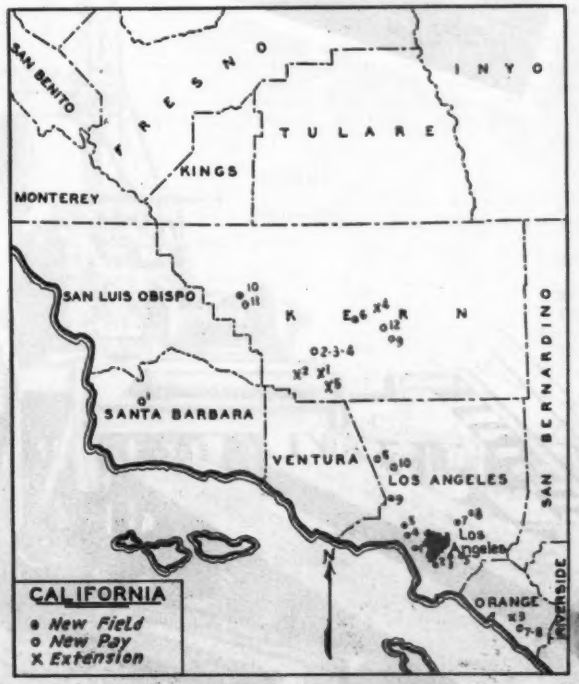
CALIFORNIA

Discoveries

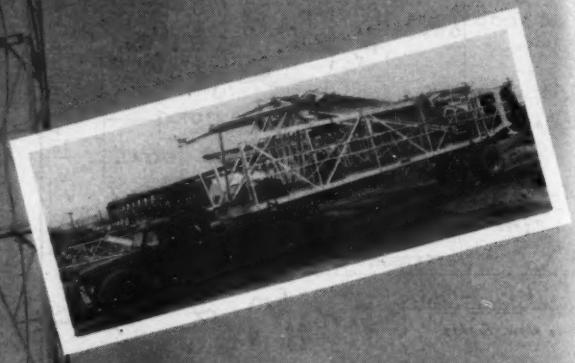
(1) Alondra, Los Angeles; Schist-Conglomerate, basement	20	67	2,500
(2) East Dominguez, Los Angeles; Eighth Callender, Miocene	10	1,818	50
(3) East Los Angeles, Los Angeles; Union Pacific, Miocene	80	100	5,000
(4) Hyperion-North El Segundo, Los Angeles; Schist-Conglomerate, basement	20	175	100
(5) Inglewood-Potrero, Los Angeles; Potrero, Miocene	20	483	1,000
(6) Jasmin, Kern; Vedder, Miocene	20	25	250
(7) La Mirada, Los Angeles; Puente, Miocene	20	158	100

CALIFORNIA (Continued)

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
(8) Leffingwell, Los Angeles; Repetto, Pliocene	20	25	50
(9) Oat Mountain, Los Angeles; Sesnon, Eocene	20	100	250
(10) Salt Creek, Kern; Tulare, Etchegoin	100	304	250
Total	330		9,550
New Pays			
(1) Casmalia, Santa Barbara; Lospe, Eocene	20	300	100
(2) Cymric, Kern; Bolton pool, Miocene	20	10	250
(3) Cymric, Kern; Woody pool, Point of Rocks, Eocene	100	302	300
(4) Cymric, Kern, Phacoides pool, Miocene	20	70	500
(5) East Los Angeles, Los Angeles; Vail pool, Miocene	60	50	5,000
(6) Newhall-Potrero, Los Angeles; Fifth R.S.F. pool, Miocene	80	240	2,500
(7) Newport, Orange; Callens pool, Miocene	120	145	2,500
(8) Newport, Orange; Macoll pool, Miocene	80	100	2,500
(9) Mountain View, Kern; Schist, basement complex	20	277	50
(10) Ramona, Los Angeles; Black, Miocene	40	142	1,500
(11) Salt Creek, Kern; Carneros sand, Miocene	80	238	7,500
(12) West Premier-Poso Creek, Kern; Santa Margarita, Miocene	20	21	250
Total	660		23,150
Extensions			
(1) Coles Levee, North, Kern; Stevens, Miocene	250	222	10,000
(2) Elk Hills, Kern; Stevens, Miocene	500	545	25,000
(3) Newport, Orange; A, B, & C zones, Miocene	500	140	15,000
(4) Race Track, Kern; Vedder and Pyramid Hills, Miocene	200	100	2,500
(5) Tejon, Kern; Chanac, Pliocene	250	56	2,500
(7) Wilmington, Los Angeles; 237 zone, Miocene	640	240	75,000
Total	2,340		130,000



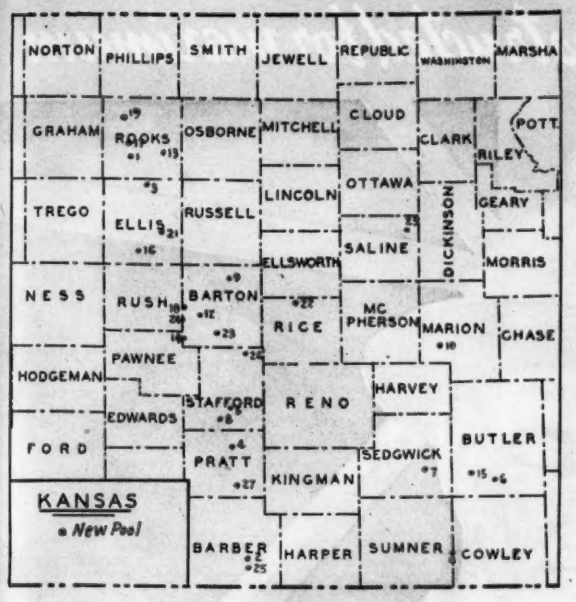
Moore Masts



Universally adaptable to drilling situations, the portable Jackknife Cantilever Rotary Drilling Mast performs its functions on land or sea.

This 126' Moore Mast was used to drill deeper than 8,000' on a well in Texas. It was set up with Lee C. Moore unitized auxiliary equipment: Sub-structure, Pipe Rack, Truck Ramp and Adjustable Stairs.

A wide range of sizes and capacities enables an operator to choose a mast to fit the job.



KANSAS

Discoveries

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
(1) Barry, Southeast, Rooks; Arbuckle	160	4	400
(2) Boggs, Barber; Simpson	120	18	360
(3) Burnett, Southwest, Ellis; Arbuckle	250	2	600
(4) Chance, Pratt; Arbuckle	200	8	500
(5) Gray, Stafford; Lansing-Kansas City	120	19	360
(6) Hickory Creek, Butler; Bartlesville	640	43	1,920
(7) Hinkle, Sedgwick; Pennsylvanian sand	160	11	400
(8) Kipp, Northeast; Lansing-Kansas City	160	19	320
(9) Klugg, Barton; Arbuckle	120	5	300
(10) Lehigh, Marion; Mississippi	80	34	160
(11) Margaret, Sumner; Arbuckle	250	2	600
(12) Merten, Northeast, Barton; Arbuckle	80	8	200
(13) Nyra, Rooks; Lansing-Kansas City	120	6	240
(14) Rutherford, Pawnee; Arbuckle	200	6	500
(15) Salter, Butler; Simpson	120	2	360
(16) Schoenchen, Ellis; Arbuckle	120	4	300
(17) Webster, Rooks; Arbuckle	200	5	500
Miscellaneous*	600	....	1,000
Total	3,700		9,020

*Includes (18) Albert, West, Rush; (19) Alcona, Rooks; (20) Boggs, South, Barber; (21) Catherine, South, Ellis; (22) Cow Creek, Rice; (23) Dundee, Barton; (24) Ryan, West, Rush; (25) Salina, South, Saline; (26) Saundra, Stafford; (27) Stoops, Southwest, Pratt; (28) Silver City, Woodson.

ILLINOIS

Discoveries

(1) Boos, East, Jasper; Rosiclare, McClosky	80	5-4	200
(2) Browns, East, White; Cypress	160	3	350
(3) Concord, North, White; Aux Vases	100	10	300
(4) Covington, East, Wayne; Aux Vases	320	8	700
(5) Epworth, East, White; Cypress	80	14	150
(6) Flora, South, Clay; McClosky	80	6	180
(7) Friendsville, North, Wabash; Biehl	320	13	550

ILLINOIS (Continued)

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
(8) Hoosier, Clay; Cypress	360	20	1,200
(9) Lancaster Central, Wabash; Rosiclare	160	7	1,500
(10) Lillyville, Cumberland; McClosky	120	9	250
(11) Massilon, Wayne; Rosiclare	80	8	250
(12) Maud, North, Wabash; Benoist	160	6	600
(13) Stanford, South, Clay; Aux Vases	560	11	2,000
(14) Willow Hill, East, Jasper; McClosky	120	8	300
Miscellaneous*	600		1,500
Total	3,300		10,030

*Includes (15) Beaver Creek, South; (16) Clarksburg; (17) Cooks Mills, North; (18) Crossville; (19) Friendsville, Central; (20) Hidalgo, North; (21) Hoosier, North; (22) Junction, North; (23) Lancaster, South; (24) Omaha, East; (25) Omega; (26) Richview; (27) Ridgeway; (28) Sandoval, West; (29) Wakefield.

INDIANA

Discoveries

(1) New Harmony, East, Posey; McClosky	160	10	500
(2) Princeton, North, Gibson; McClosky	100	5	250
(3) Springfield, Posey; McClosky	20	5	30
Total	280		780

New Pays

Miscellaneous*	320	....	700

*Includes (1) Lysle, Gibson; McClosky; (2) Mount Carmel, East, Gibson; Tar Springs, Benoist; (3) New Harmony, South, Posey; Pennsylvanian sand; (4) Prairie, Posey; Mansfield; (5) Princeton, North, Gibson; Cypress.

Extensions

Miscellaneous*	1,000	....	1,500

*Includes (1) Francisco, West, Gibson; Rosiclare; (2) Griffin, Posey; Tar Springs; (3) New Harmony, South, Posey; Hardinsburg; (4) Union-Bowman, Pike; Waltersburg; (5) Wheeling, Pike; Oakland City sand.

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MISSISSIPPI

Discoveries

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
(1) Pine Ridge, Adams; Wilcox	80	4	160
Total	80		160

New Pays

(1) LaGrange, Adams; Massive	80	5	160
Total	80		160

ROCKY MOUNTAIN AREA

COLORADO

Discoveries

(1) Elk Springs, Moffat; Weber	40	53	160

New Pays

(2) Rangely, Rio Blanco; Shinarump	40	50	160

Extensions

(3) Rangely, Rio Blanco; Weber	3,420	400	51,300

WYOMING

Discoveries

(4) Dubois, Fremont; Embar	40	82	800
(5) River Dome, Washakie; Embar	480	35	1,400
(6) Corley, Hot Springs; Embar	120	34	240
(7) Church Buttes, Uinta; Dakota	120	100	1,200
(8) Table Rock, Sweetwater; Lance (gas)	....	....	.....
(9) Skull Creek, Weston; Muddy	40	34	40
Total	800		3,680

New Pays

(10) South Elk Basin, Park; Dakota (gas)	....	....	.....
(11) Bailey, Carbon; Tensleep	40	354	120
(12) Black Mountain, Washakie; Madison	40	121	120
(13) Elk Basin, Park; Madison	40	673	200
Total	120		440

Extensions

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
(14) Beaver Creek, Fremont; Lakota (gas)	....	....	.....
(15) Crooks Gap, Fremont; Lakota	240	36	2,400
(16) Big Muddy, Converse; Dakota	240	15	240
(17) Zimmerman Butte, Hot Springs; Embar	320	31	1,600
Total	800		4,240

MONTANA

Discoveries

(18) Rattlesnake Butte, Petroleum; Second Cat Creek	40	30	40
(19) West Kevin, Toole; Ellis-Madison	40	3	40
Total	80		80

New Pays

(20) West Cat Creek, Petroleum; Ellis	80	13	80
(21) East Cat Creek, Garfield; Ellis	240	12	480
(22) East Utopia, Liberty; Devonian (gas)	....	....	.....
Total	320		560

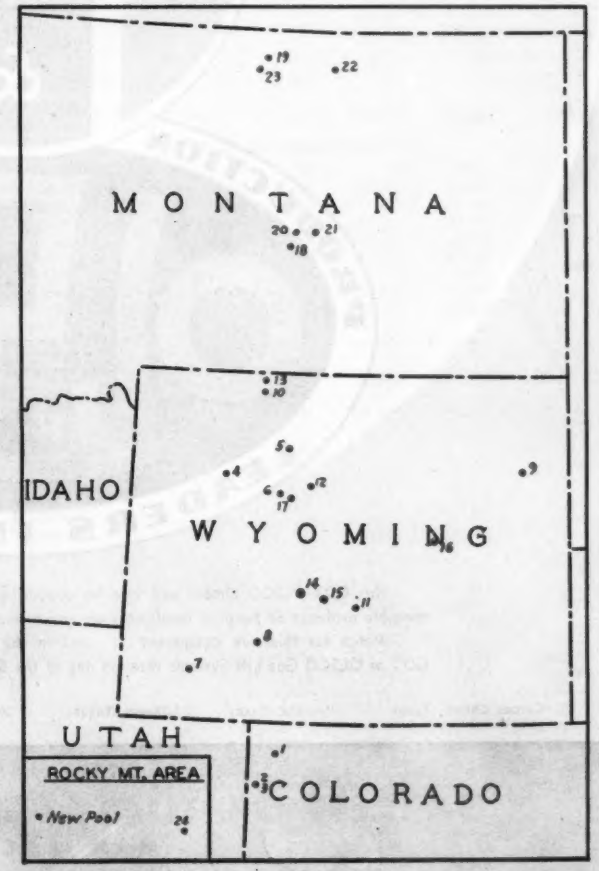
Extensions

(23) Cut Bank, Glacier; Madison	680	14	2,000

UTAH

Discoveries

(24) Crescent, Grand; 2nd Dakota	40	25	40



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Annual and Cumulative Production, Remaining Reserves by Fields

On this and the following four pages are detailed remaining reserves of the country's larger fields

PRODUCTION AND RESERVES—CALIFORNIA FIELDS

(In thousands of barrels)

SAN JOAQUIN VALLEY

	1946 production	January 1, 1947 — Cumulative	Estimated reserves	No. of wells
Ant Hill	503	725	3,224	35
Antelope Hills	575	2,783	7,203	29
Antelope Plains	.....	13	187	0
Arvin	8	1,620	180	2
Bellevue	135	489	706	3
Belridge, North	1,954	53,754	16,245	84
Belridge, South	3,903	39,076	32,915	880
Blackwell's Corner	76	177	1,011	28
Buena Vista Hills	14,762	330,135	99,864	1,043
Burrel	4	29	221	2
Canal	864	12,513	17,485	36
Canfield	11	153	46	1
Coalinga, East	6,253	256,077	68,931	604
Coalinga, Nose	20,422	118,677	261,321	219
Coalinga, West	2,523	158,758	26,243	779
Coles Levee, North	5,677	31,227	73,776	90
Coles Levee, South	1,442	9,704	27,793	35
Cymric	3,111	23,111	22,951	170
Dyer Creek	.....	28	.....	0
Edison	5,305	18,948	35,055	259
Elk Hills	3,668	194,732	250,268	173
Fruitvale	2,734	38,480	21,508	207
Gosford	30	86	710	2
Greeley	3,894	28,039	36,960	99
Helm	1,586	3,501	7,022	66
Jacalitos	1,622	3,188	8,468	52
Kern Front	4,550	69,023	37,804	788
Kern River	3,600	297,882	32,121	2,062
Kettleman Middle Dome	.....	544	.....	0
Kettleman North Dome	13,867	323,919	116,587	275
Lanare	781	1,028	3,147	31
Lost Hills	1,320	59,080	10,919	423
McClung	14	103	346	1
McKittrick	1,692	81,655	15,238	314
Midway-Sunset	13,469	703,807	116,182	2,723
Mountain View	1,392	46,532	10,320	180
Mount Poso	5,956	92,064	63,984	517
Paloma	2,881	5,700	32,580	50
Pleasant Valley	1,308	3,787	13,712	24
Pyramid Hills	118	327	930	22
Race Track	509	733	4,137	25
Raisin City	1,020	3,881	7,649	40
Rio Bravo	4,855	38,317	61,683	101
Riverdale	1,482	5,361	12,981	57
Rosedale Ranch	46	78	422	4
Round Mountain	3,352	50,055	30,188	334
Salt Creek	430	430	7,320	21
Santiago	1,860	1,987	15,513	28
Shafter	.....	53	.....	0
Sheep Springs	176	411	1,319	5
Strand, East	209	787	1,744	7
Strand, West	635	4,064	5,937	17
Tejon	485	714	5,788	57
Ten Section	3,229	38,911	51,082	118
Union Avenue	141	381	869	3
Wasco	270	4,570	5,430	7
Wheeler Ridge	84	4,376	625	34
Misc. small pools	28	47	524	15
Total San Joaquin	150,821	3,166,500	1,687,374	13,181

COASTAL DISTRICT

Aliso Canyon	1,106	6,537	19,113	43
Bradley Canyon	.....	22	.....	0
Captan	1,265	10,781	13,719	66
Del Valle, East	702	3,462	7,046	20

COASTAL DISTRICT (Continued)

	1946 production	January 1, 1947 — Cumulative	Estimated reserves	No. of wells
Del Valle, West	1,218	4,065	11,476	31
Elwood	2,451	77,614	19,386	70
Gato Ridge	1,429	12,830	14,167	40
Goleta	.....	136	.....	0
Newhall Potrero	2,116	11,550	24,694	61
Oak Canyon	650	2,297	8,701	16
Oxnard	368	956	2,053	6
Padre Canyon	894	4,338	9,661	28
Ramona	446	512	3,738	32
Rincon	1,629	21,119	16,630	98
San Miguelito	1,845	14,756	40,246	43
Santa Barbara	33	3,667	333	13
Santa Maria	4,906	162,910	69,008	358
Santa Maria Valley	11,944	74,978	95,099	461
Summerland	1	3,180	20	2
Ventura Avenue	16,899	320,012	189,985	579
Ventura Newhall	2,543	74,283	19,449	590
Watsonville	5	1,525	25	5
Zaca Creek	110	155	345	2
Total Coastal District	52,560	811,685	564,894	2,564

LOS ANGELES BASIN

Alondra	72	72	2,428	1
Brea Olinda	3,948	180,806	42,687	367
Buena Park	24	187	113	2
Coyote, East	1,755	53,243	21,760	158
Coyote, West	5,575	149,988	45,012	170
Dominguez	5,876	167,883	67,166	326
East Los Angeles	179	179	9,821	4
El Segundo	211	11,765	2,237	25
Huntington Beach	17,144	378,732	156,265	880
Hyperion	16	16	84	1
Inglewood	4,718	156,307	43,683	304
La Mirada	22	22	78	1
Lawndale	7	1,169	81	2
Leffingwell	7	7	43	1
Long Beach	9,107	721,526	83,478	1,129
Los Angeles-Salt Lake	161	67,086	792	92
Montebello	3,133	146,073	27,132	342
Newport	1,860	2,371	22,811	122
Playa Del Rey	864	53,021	6,960	108
Potrero	334	6,079	2,182	29
Richfield	2,710	109,114	22,883	334
Rosecrans	1,852	59,430	18,064	199
Sansinena	30	52	348	2
Santa Fe Springs	6,113	508,933	58,567	551
Seal Beach	3,695	105,741	36,759	173
Torrance	3,142	120,239	32,253	746
Turnbull Canyon	50	446	554	4
Whittier	374	27,147	2,895	167
Wilmington	40,244	321,722	385,486	1,653
Yorba Linda	2	759	4,238	2
Total Los Angeles	113,225	3,350,115	1,096,880	7,895
Total California	316,606	7,328,300	3,349,148	23,640

ROCKY MOUNTAIN AREA

WYOMING

Big Muddy	553	29,408	5,592	162
Big Sand Draw	419	682	5,318	2
Byron	2,382	16,620	16,380	45
Circle Ridge	379	1,179	3,821	12
Cole Creek	495	2,905	10,937	37
Crooks Gap	554	1,019	4,081	5

NEW TAYLOR "TRANSET"

Gives More Precise Control . . .

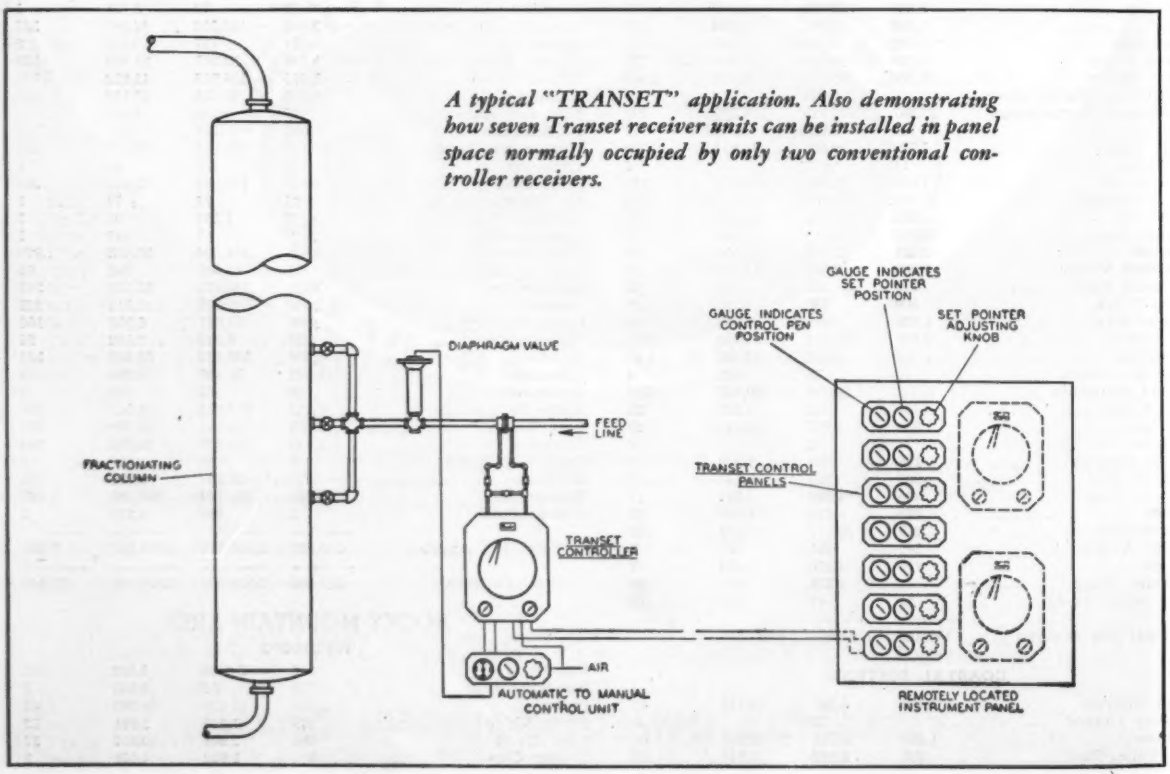
What It Is. A new Pneumatic Transmission System particularly adapted to applications involving long lead lines between transmitter and control panel and where compactness of control panel is a consideration.

It is applicable to the control of temperature, pressure, rate of flow, and liquid level.

How It Works. The Transet Controller is in reality a Fulscope Pneumatic-Set Recording Controller-Transmitter (see interior view opposite). Left hand control mechanism regulates the control valve while other side transmits air pressure, proportional to pen movement, to the indicating receiver remotely located on panel board.

The left gauge of the receiver unit (shown on opposite page) is calibrated in same units of measurement as the controller chart and thus provides an indication of the controlled variable. The right gauge, connected in the pneumatic-set line and calibrated in same units as controller chart, gives an indication of set pointer position. Thus, when both pointers of receiver unit coincide, the pen and set pointer of Transet will be together and process will be at desired control point.

The controller set pointer is pneumatically adjusted by manipulating reducing valve on right end of receiver panel until pointer of pneumatic-set gauge is at desired value.



A typical "TRANSET" application. Also demonstrating how seven Transet receiver units can be installed in panel space normally occupied by only two conventional controller receivers.

CONTROLLER

Cuts Panel Board Size to 1/3

ALL THESE ADVANTAGES

1. More Precise Control: Eliminates, or reduces to a negligible minimum, the time lag in the control circuit (point of measurement to controller and back to control valve) because Transet Controller can be at or very near the point of measurement.

This permits most favorable controller sensitivity and reset rate for process. For example, on one large installation the substitution of "Transet" permitted controller sensitivity to be raised from 5 to 50, and consequently much closer control resulted. Whereas with conventional remote pneumatic transmission system when controller-receiver is 300 to 1000 feet from transmitter, sufficient time lag in the control circuit [600 to 2000 feet] is introduced to require substantially unfavorable sensitivity and reset rate settings.

2. Pneumatic Control At Its Best: The simplicity, economy and dependability of Taylor Fulscope air-operated controllers are universally recognized. Taylor "Transet" Control now extends all of these advantages to remote pneumatic transmission systems.

3. Field Tested and Time Proven: Not an experiment; simply new combinations of various standard Taylor Fulscope control features designed to better serve the needs of the process industries.

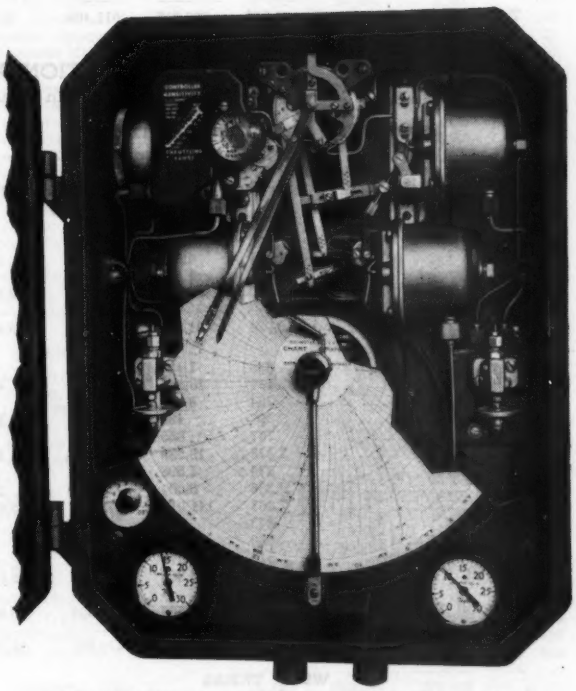
4. Standard Case Construction: Not only conveniently contains controller, transmitter and pneumatic-set mechanisms, but also allows ample space for either spring-driven or explosion-proof electric chart clock.

5. Less Expensive Panels and Control Rooms: You can put *seven* of the Transet receiver units in same space required by *two* conventional recording receiver-controllers (see sketch opposite). This can be a real economy on large installations.

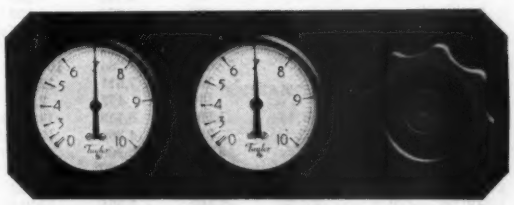
6. More Convenient for Process Engineers: The easy-to-read dials on the compact panels enable the process engineer to easily and quickly check all related process variables without having to move all over a large control room.

▼ ▼ ▼

You will want the full story. Call in your local Taylor Field Engineer, or write to Taylor Instrument Companies Rochester, N. Y., or Toronto, Canada.



"TRANSET" Recording Controller-Transmitter.



Indicating Receiver (left). Set Pointer (center). Set Point Adjustment (right).

Taylor Instruments
MEAN
ACCURACY FIRST
IN HOME AND INDUSTRY

WYOMING (Continued)

	1946 production	January 1, 1947 Cumulative	January 1, 1947 Estimated reserves	No. of wells
Elk Basin	4,478	24,279	175,721	219
Frannie	1,240	11,429	10,571	43
Garland	1,084	8,176	21,824	41
Gebo	409	1,125	6,875	13
Grass Creek	1,088	35,208	9,792	345
Hamilton Dome	1,347	9,216	8,784	38
Labarge	470	10,210	4,290	136
Lance Creek	4,669	73,757	41,234	234
Little Buffalo Basin	526	824	4,774	14
Lost Soldier	2,119	31,957	31,043	59
Oregon Basin	4,032	38,614	119,386	157
Rock River	846	25,232	8,768	55
Salt Creek	4,658	322,379	54,621	1,788
Steamboat Butte	1,853	3,698	11,302	13
Wertz	1,067	12,832	12,268	23
Miscellaneous	3,876	45,596	44,018	602
Total Wyoming	38,544	706,345	611,409	4,043

MONTANA

	1946 production	January 1, 1947 Cumulative	January 1, 1947 Estimated reserves	No. of wells
Cut Bank	4,606	51,765	51,235	996
Elk Basin	1,360	4,270	15,630	50
Kevin-Sunburst	1,836	49,043	20,957	1,020
Mosby Dome	386	408	1,680	28
Miscellaneous	841	28,023	5,687	300
Total Montana	9,029	133,509	95,189	2,394

COLORADO

Iles Dome	440	11,417	3,583	29
Rangely	8,018	11,533	238,467	198
Wilson Creek	2,353	7,971	24,029	30
Miscellaneous	780	35,461	6,430	123
Total Colorado	11,591	68,382	272,509	380

PRODUCTION AND RESERVES—TEXAS

(In thousands of barrels)

NORTH AND WEST CENTRAL TEXAS

	1946 production	January 1, 1947 Cumulative	January 1, 1947 Estimated reserves	No. of wells
RAILROAD DIST. 7-B				
Avoca	551	4,263	5,737	47
Griffin	502	4,193	5,807	52
Wimberly	1,361	4,181	10,819	169
Reddin	821	1,553	4,447	94
Misc. Dist. 7-B	7,699	407,313	52,687	6,478
Subtotal Dist 7-B	10,934	421,503	79,497	6,840
RAILROAD DIST. 9—				
Daume	829	1,109	3,891	76
Hull-Silk-Sikes	3,401	26,266	35,234	425
Antelope	794	3,462	8,538	75
Gatewood	397	482	3,518	115
Sivels Bend	767	855	7,145	29
Walnut Bend	2,473	13,739	13,261	184
Dodson	374	1,596	3,404	33
Hildreth	2,350	6,004	23,996	151
K-M-A	7,881	111,015	73,985	2,616
West	373	866	2,134	37
Fargo	660	4,695	4,055	54
National	510	572	4,428	25
Misc. Dist. 9	24,450	778,905	171,095	16,046
Subtotal Dist. 9	45,239	949,566	344,684	19,866
Total N. & W. C. Tex.	56,173	1,371,069	424,181	26,706

WEST TEXAS

RAILROAD DIST. 8—				
Abell	810	5,055	7,945	99
Apco-Warner	740	2,713	9,287	46
Bedford	238	250	3,750	4
Block 31	861	885	21,115	30
Cedar Lake	689	3,251	11,749	55
Cowden, North	10,098	57,584	107,416	665
Cowden, South	1,155	7,611	12,389	134
Dollar Hide	140	152	2,842	5
Embar	1,599	5,118	14,882	38
Emma	858	4,369	10,631	75
Foster	5,383	35,963	41,037	610
Fuhrman-Mascho	1,514	8,239	16,761	197
Fullerton	10,930	21,377	203,623	465
Garza	1,165	1,385	6,215	111
Goldsmith	8,838	73,001	176,999	1,014
Henderson	666	11,772	5,228	78
Hendrick	1,393	210,994	14,006	228
Howard-Glasscock	4,993	123,760	61,340	891
Iatan-East Howard	1,408	22,079	14,921	390
Johnson	1,055	6,489	13,511	129
Jordan	2,322	14,397	25,603	223
Kermit & Ellenburger	970	33,911	16,089	616
Keystone	15,754	36,458	333,542	586
Mabee	1,032	2,421	22,579	73
Martin	266	305	4,695	10
McElroy	9,784	164,548	115,452	674
Means	1,357	10,780	24,220	151
Midland Farms	548	1,009	18,991	19
Monahans	621	1,339	18,661	22
Penwell	1,153	27,763	22,237	179
Sand Hills-Tubbs	2,985	13,315	36,685	257
Seminole	7,486	32,667	97,333	329
Sharon Ridge	503	2,871	7,129	261
Slaughter	20,858	93,165	386,835	2,054
Taylor-Link	483	9,720	6,380	153
Toborg	417	9,261	6,739	273

WEST TEXAS (Continued)

	1946 production	January 1, 1947 Cumulative	January 1, 1947 Estimated reserves	No. of wells
T-X-L	5,323	6,085	143,915	144
Union	604	1,474	8,526	26
Waddell	1,257	8,703	41,297	126
Ward, North-Estes	4,328	56,793	58,207	868
Wasson	21,299	123,342	456,658	1,573
Welch	1,010	1,091	13,909	81
Westbrook	515	12,174	7,826	157
Wheeler	1,322	2,426	47,574	33
Yates	13,555	315,256	324,744	594
Misc. Dist. 8	10,848	123,969	124,372	2,658
Subtotal Dist. 8	181,133	1,707,290	3,125,845	17,404
RAILROAD DIST. 7-C—				
Barnhart	1,549	4,473	25,527	40
Big Lake	1,279	106,639	13,361	194
McCamey	3,281	67,587	42,413	846
Todd Deep	2,420	3,589	21,411	70
World	715	10,605	9,395	95
Misc. Dist. 7-C	724	5,342	7,893	182
Subtotal Dist. 7-C	9,968	198,235	120,000	1,427
Total West Texas	191,101	1,905,525	3,245,845	18,831

TEXAS PANHANDLE

Carson County	3,515	58,136	41,864	705
Gray County	14,619	263,523	166,477	2,677
Hutchinson County	10,389	212,493	117,507	2,282
Wheeler County	1,042	28,491	10,509	419
Miscellaneous	97	5,928	2,000	54
Total Panhandle	29,662	568,571	338,357	6,137

NEW MEXICO

Arrowhead	1,691	11,517	19,483	124
Cooper-Jal	746	24,077	6,923	109
Eunice	5,094	81,679	68,321	478
Eunice, South	552	8,716	3,784	86
Eunice, West	361	1,884	3,116	30
Monument	6,565	80,409	94,591	499
Grayburg-Jackson	1,811	21,393	20,607	270
Hobbs	3,569	116,192	58,808	252
Langlie-Mattix	1,196	21,368	11,632	322
Lovington	1,204	5,206	10,794	95
Maljamar (inc. repressure)	2,033	13,783	18,215	234
Loco Hills (Press. Mntnce.)	914	10,796	9,204	203
Paddock	655	720	10,280	54
Penrose-Skelly	740	17,145	7,855	337
Square Lake	862	4,356	8,644	208
Vacuum	4,054	35,073	94,927	357
Drinkard	650	750	6,250	57
Hospah	265	1,870	2,130	38
Miscellaneous	3,742	39,712	52,350	860
Total New Mexico	36,704	496,646	507,914	4,613

EAST TEXAS

RAILROAD DIST. 5—				
Mexia	467	100,409	6,591	160
Powell	440	117,738	7,262	131
Sulphur Bluff	1,250	15,048	14,952	67
Van	10,690	172,903	277,097	329
Misc. R.R. Dist. 5	1,126	60,944	7,873	1,033
Subtotal District 5	14,603	468,026	313,775	1,720

EAST TEXAS (Continued)

	1946 production	January 1, 1947 Cumulative	January 1, 1947 Estimated reserves	No. of wells
RAILROAD DIST. 6—				
East Texas field	120,581	2,357,467	2,642,533	23,061
Cayuga	2,518	37,175	27,825	231
Coke	826	3,045	7,355	29
Hawkins	14,786	61,688	388,312	574
Long Lake	1,758	12,339	17,631	151
Manziel	599	1,681	6,319	36
New Hope	1,218	3,991	12,009	73
Quitman	2,328	7,212	27,788	70
Rodessa (Texas)	1,180	57,292	6,708	276
Talco	8,741	92,985	77,015	722
Misc. R.R. Dist. 6	4,452	25,611	22,389	574
Subtotal District 6	158,987	2,660,486	3,235,684	25,797
Total East Texas	173,590	3,128,512	3,549,659	27,517

SOUTHWEST TEXAS

RAILROAD DIST. 4—				
Agua Dulce-Stratton	7,271	29,127		448
Borregas		1		1
Monte Negra	25	28		
Seeligson (all zones)	13,065	33,384	982,534	561
Tijerina-Canales	2,249	3,524		111
Blucher	357	404		12
La Gloria (all zones)	694	998		34
Alice	471	4,640	5,360	47
Alta Mesa	502	2,811	6,189	38
Aransas Pass	1,016	15,853	10,147	72
Benavides	1,154	16,527	13,473	175
Ben Bolt	579	4,788	5,212	60
Cameron	380	905	4,095	24
Clara Driscoll, South	552	6,253	6,747	75
Colorado	737	5,160	9,840	243
Conoco-Driscoll	922	8,800	11,200	61
Flour Bluff & East	1,282	12,798	12,202	94
Garcia	1,359	2,894	12,106	86
Government Wells, No.	1,550	37,791	20,209	385
Government Wells, So.	590	21,290	7,710	202
Hoffman	1,111	14,426	10,574	300
Kelsey (all zones)	1,419	6,019	15,981	126
Loma Novia	1,012	31,844	13,156	441
Lopez	706	15,771	6,229	286
Luby	1,015	12,789	7,211	131
Magnolia City, North	614	1,501	4,499	30
Midway	1,104	7,067	9,933	72
Minnie Bock	599	4,460	5,540	62
Odem	693	3,247	7,253	70
O'Hern	498	12,946	5,054	141
Piedra Lumbre	606	6,294	6,706	123
Plymouth	3,209	39,105	30,895	183
Richard King	1,060	6,363	9,637	87
Rincon	2,327	13,442	21,558	154
Rincon, North	577	1,528	8,472	44
Saxet (all zones)	2,313	60,243	24,757	171
Sejita	428	1,424	18,576	38
Seven Sisters	2,244	26,524	18,476	382
Sun	1,106	5,357	12,643	78
Sun, North	490	1,841	4,159	32
Taft	858	8,832	6,168	75
Turkey Creek	468	6,198	5,152	43
Wade City	654	6,243	8,757	78
White Point, East	3,803	27,834	32,166	242
Willamar	4,708	9,029	51,971	194
Misc. Dist. 4	11,721	121,173	109,830	2,453
Subtotal Dist. 4	80,098	659,476	1,562,377	8,765
RAILROAD DIST. 1—				
Darst Creek	2,577	65,702	14,298	317
Luling-Branyon	1,405	87,970	12,030	636
Pearsall (all sands)	430	3,179	4,321	53
Salt Flat	553	46,431	5,112	206
Misc. Dist. 1	2,090	55,002	19,280	1,931
Subtotal Dist. 1	7,055	258,194	55,041	3,143
Total S. W. Texas	87,153	917,670	1,617,418	11,908

GULF COAST TEXAS

RAILROAD DIST. 3—				
Amelia	1,486	13,423	11,577	93
Anahuac	10,127	65,766	169,234	346
Barbers Hill	1,848	85,132	24,868	119
Bay City (Exc. North)	1,424	11,099	10,901	54
Clear Lake	1,388	7,700	13,300	59
Conroe	20,718	227,250	272,750	889
Dyersdale	862	3,681	5,319	66
Esperson Dome & South	954	12,192	12,808	89
Fairbanks	2,194	21,443	18,557	273
Fannett	3,351	12,561	12,439	74
Fig Ridge	2,614	9,116	25,884	72

GULF COAST TEXAS (Continued)

	1946 production	January 1, 1947 Cumulative	January 1, 1947 Estimated reserves	No. of wells
Gillock	1,523	13,075	11,825	110
Hardin	983	12,592	7,408	92
Hastings	19,355	125,999	349,001	661
High Island	978	22,376	8,624	62
Hull	1,221	102,252	12,748	146
Humble & Light	773	130,755	7,245	188
Katy	4,631	13,821	96,119	35
League City	790	5,782	6,218	29
Livingston (Inc. Sparta & W.)	1,710	11,457	11,543	127
Lochridge	574	6,475	5,525	34
Lovell's Lake	1,720	11,593	18,407	117
Magnet-Withers	2,856	24,411	40,589	250
Manvel	2,654	34,408	25,592	141
Markham, North	1,259	5,422	14,578	39
Mercy	945	4,120	9,880	36
North Withers	3,721	16,269	3,731	153
Old Ocean	6,107	23,732	191,268	142
Oyster Bayou	2,046	7,802	17,198	21
Raccoon Bend	2,824	37,961	27,039	157
Red Fish Reef	1,016	3,411	11,589	23
Seabreeze	008	2,635	6,365	21
Segno & Deep	1,275	12,128	10,872	111
Silsbee	1,076	6,565	6,435	44
South Lake	737	82,717	7,283	137
South Houston	1,551	14,212	12,788	79
Sugarland	1,718	40,293	24,707	43
Thompson	9,361	80,281	119,719	219
Tomball	3,723	37,263	32,737	435
Webster (Friendswood)	18,708	83,814	226,186	207
West Columbia (Old, New, Deep)	2,329	100,852	24,148	150
Misc. Dist. 3	29,568	609,020	108,768	2,281
Subtotal Dist. 3	175,284	2,152,856	1,933,772	8,397
RAILROAD DIST. 2—				
Ganado & Deep	605	2,649	6,351	50
Ganado, West	761	2,858	8,142	55
Greta & Deep	3,427	40,579	24,421	207
Heyser	2,282	28,895	21,105	183
La Rosa	1,314	8,602	11,398	78
La Ward, North	919	4,126	15,874	100
Lolita	2,297	12,541	22,451	192
Maubro	723	3,184	6,816	86
Mayo	604	2,297	6,703	41
McFaddin	1,702	10,871	14,129	91
Placedo	1,656	20,337	14,663	141
Placedo, East	516	2,374	3,626	32
Refugio area	2,327	51,294	23,706	203
Slick (Wilcox)	1,596	3,933	11,067	49
Tom O'Connor	15,037	98,284	351,716	494
West Ranch	7,079	40,260	124,740	458
Misc. Dist. 2	8,795	62,033	24,032	944
Subtotal Dist. 2	51,630	395,117	690,930	3,404
Total Gulf Coast	226,914	2,547,973	2,624,702	11,801

PRODUCTION AND RESERVES—LOUISIANA

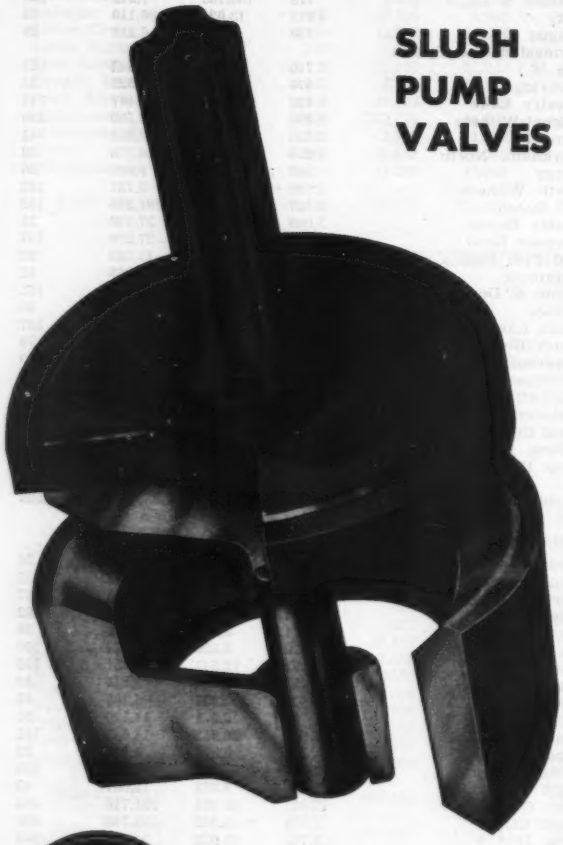
(In thousands of barrels)

SOUTH LOUISIANA

Anse La Butte	2,441	14,968	25,032	75
Avery Island	1,225	2,943	17,057	17
Barataria	1,499	7,669	17,331	24
Bayou Sale	3,502	12,506	37,494	61
Bosco	1,077	27,541	12,459	44
Caillou Island	2,078	40,369	24,631	54
Chalkley	752	8,909	8,091	24
Charenton	1,181	14,156	13,844	113
Delta Farms	4,481	11,601	33,399	63
East White Lake	1,428	4,552	10,448	26
Egan	1,461	1,937	33,063	36
Eola	1,668	22,342	19,658	66
Erath	6,609	17,946	82,054	31
Garden Island	1,198	10,989	12,011	41
Gibson	1,275	13,269	16,731	30
Gibson, Northeast	1,256	5,300	14,700	17
Golden Meadow	1,433	24,434	25,566	145
Good Hope	1,735	2,533	12,467	26
Grand Bay	3,094	17,116	22,884	51
Gueydan	1,705	8,956	16,044	28
Hackberry, East	1,648	34,795	20,205	55
Hackberry, West	2,145	20,658	24,342	77
Iberia	1,740	36,052	33,948	67
Iowa	2,497	60,046	24,954	65
Jennings	2,028	96,472	28,528	94
Lafitte	4,383	48,296	48,704	63
Lake Chicot	885	3,245	10,755	19
Lake Pelto	1,298	5,919	12,081	23

RED DEVIL

SLUSH PUMP VALVES



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MINIMUM UPKEEP COST

RED DEVIL Slush Pump Valves with REVERSIBLE INSERTS provide MAXIMUM service at MINIMUM expense on high-pressure drilling jobs. They SEAL TIGHT and stay on the job longer because they're scientifically engineered to SEAL RIGHT and made of highest-quality materials to insure longest service for tough jobs. Available for ANY SIZE or MAKE of Pump.

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ESTABLISHED 1893

SOUTH LOUISIANA (Continued)

	1946 production	January 1, 1947 Cumulative	Estimated reserves	No. of wells
Lake Salvador	1,628	7,167	12,833	26
La Pice	811	2,262	7,738	23
Leeville	1,388	30,180	17,820	73
Neale	1,516	9,543	25,457	50
North Crowley	1,534	13,135	16,865	40
Paradis	3,689	19,221	50,779	68
Pine Prairie	1,827	8,260	16,740	60
Port Barre	1,085	15,502	14,498	56
Quarantine Bay	3,205	18,791	24,209	46
Roanoke	921	13,032	8,968	29
St. Gabriel	1,741	9,228	15,778	29
Sulphur Mines	717	19,671	8,329	61
University	1,866	21,105	20,855	63
Venice	3,101	16,397	28,603	44
Ville Platte	2,577	34,553	35,447	229
Vinton	3,359	53,103	21,897	113
West Bay	1,240	5,555	11,445	21
West Cote Blanche	983	4,121	8,879	20
West Lake Verret	1,134	5,824	14,176	34
West Tepetate	1,827	2,859	12,141	30
White Castle	1,029	11,141	9,859	30
Misc. South Louisiana	23,766	256,044	196,069	970
Total South Louisiana	118,666	1,152,213	1,236,866	3,550

NORTH LOUISIANA

Caddo	1,897	173,426	16,574	1,418
Cotton Valley	2,671	52,251	32,749	158
Cross Lake	415	7,848	2,152	51
Delhi-Big Creek	6,359	7,489	152,511	291
Haynesville	2,936	90,896	34,104	346
Haynesville, East	374	381	1,019	14
Holly	501	2,214	2,286	42
Holly Ridge	1,251	3,537	21,463	35
Homer	944	76,370	8,630	311
Lake St. John	4,356	7,243	52,757	105
Lisbon	433	12,806	2,194	140
Little Creek	606	4,910	4,090	70
Nebo	2,706	16,869	18,131	148
Olla	2,438	22,015	22,985	182
Rodessa	2,025	88,285	11,715	308
Sligo	370	5,113	2,387	84
Urania	601	29,400	5,600	268
Miscellaneous	2,059	108,086	16,422	606
Total North Louisiana	32,942	709,139	407,769	4,577

PRODUCTION AND RESERVES—ARKANSAS

(In thousands of barrels)

Atlanta	1,570	7,915	9,085	49
Buckner	545	5,925	8,075	27
Dorcheat-Macedonia	1,389	9,369	20,631	101
El Dorado & E. El Dorado	386	60,033	4,967	225
Fouke	963	3,478	5,522	45
Magnolia	4,683	45,822	54,178	110
McKamie	1,044	5,318	11,482	21
Midway	2,666	11,067	28,933	40
Schuler	4,312	51,394	33,606	86
Smackover	4,070	411,109	48,891	1,528
Stephens	1,880	14,699	13,301	353
Village	1,214	4,624	7,376	37
Wesson	646	660	5,340	37
Miscellaneous	2,731	62,389	28,610	591
Total Arkansas	28,099	693,802	279,997	3,250

MISSISSIPPI-ALABAMA

(In thousands of barrels)

MISSISSIPPI

Baxterville	1,272	1,325	68,675	39
Brookhaven	1,104	1,170	13,730	22
Cranfield	4,457	7,098	92,902	71
Eucutta	2,400	4,916	70,084	108
Heidelberg	4,084	8,423	93,577	125
Langsdale	378	471	5,129	22
Pickens	1,780	8,387	16,613	44
Tinsley	8,090	94,271	75,729	308
Miscellaneous	683	1,111	35,950	50
Total Mississippi	24,248	127,172	472,389	789

ALABAMA

Gilbertown	325	558	2,680	21
Gilbertown, East	57	59	660	6
Total Alabama	382	617	3,340	27

PRODUCTION AND RESERVES—OKLAHOMA

(In thousands of barrels)

	1946 production	January 1, 1947 Cumulative	Estimated reserves	No. of wells
Allen (Deep)	1,120	57,416	12,584	280
Antioch, Southwest	607	607	9,393	29
Apache	1,591	10,412	9,588	35
Arcadia, Northeast	465	851	4,149	14
Avant	716	97,713	7,287	735
Aylesworth	721	1,083	2,417	34
Bebee	661	16,213	5,787	203
Billings (Deep & Shallow)	820	24,850	5,150	74
Bowlegs	1,169	128,690	8,310	177
Burbank	2,927	220,959	29,041	1,690
Burbank, South	1,886	42,903	17,097	220
Cache Creek	668	668	6,332	205
Carr City	456	33,577	4,423	60
Cement	4,801	42,812	32,188	478
Cheyarha	1,217	2,221	5,779	107
Coon Creek	561	561	8,439	33
Coyle	719	8,719	5,281	30
Crescent	1,557	19,596	10,404	125
Cromwell	726	60,924	7,076	212
Cromwell, East	368	5,710	1,740	70
Cumberland	3,696	21,564	38,436	146
Cushing	2,792	373,954	31,046	1,690
Davenport	450	13,168	2,332	146
Duncan, West	679	7,851	3,049	105
Earlsboro	716	129,976	5,024	140
Earlsboro, East	379	40,932	2,568	60
Ed Cox	284	1,364	1,636	83
Edmond	583	22,020	2,980	70
Edmond, West	23,565	58,545	121,455	763
Fish	386	20,185	1,315	133
Fitts	1,518	103,734	11,236	558
Garber	546	58,115	4,815	536
Glenn Pool	2,418	230,723	19,277	1,678
Hawkins, Northwest	433	702	3,798	92
Healdton	2,438	203,349	21,651	1,878
Hewitt & West Hewitt	1,698	103,739	9,261	895
Hoover, Northwest	447	780	3,220	49
Jackson	394	1,249	3,751	55
Jesse	508	7,826	5,174	58
Keokuk	582	14,957	6,543	86
Little River	1,159	118,970	12,030	178
Lone Grove, Southwest	388	1,540	3,460	83
Lovell, Southeast	511	712	3,288	16
Lucien	803	34,075	5,925	117
Moore, South	1,131	1,962	13,038	35
Moore, West	1,145	2,067	3,933	33
Naval Reserve	506	20,537	4,463	231
Oklahoma City	10,693	642,546	57,454	774
Pauls Valley	2,232	12,159	10,841	86
Pauls Valley, East	739	2,195	5,805	88
Polo	389	5,201	3,799	26
Ramsey	799	11,207	3,793	39
Shawnee, Northeast	382	1,294	3,206	7
Seminole City	1,307	136,920	13,080	172
Sholem-Alechem	708	41,766	7,234	300
Slick	589	35,679	4,321	190
St. Louis	1,500	168,870	11,130	468
Soldier Creek	187	187	1,513	65
Sylvian	356	713	1,787	34
Tatums	548	19,051	3,949	217
Tonkawa	396	123,664	6,336	143
Tussy	904	9,158	6,842	149
Velma (Deep & Shallow)	2,051	11,022	8,978	826
Velma, West	406	406	3,594	21
Watchorn, East	756	3,941	6,059	27
Wildcat Jim	705	19,609	5,391	122
Wilzetta, Northwest	253	253	1,747	16
Yale-Quay	685	25,126	6,874	169
Miscellaneous	36,732	1,949,633	236,372	34,145
Total Oklahoma	137,228	5,589,681	947,274	52,799

PRODUCTION AND RESERVES—KANSAS

Barry	587	1,679	3,221	26
Bemis-Shutts	5,305	42,962	25,018	481
Big Creek	764	8,805	6,195	135
Bloomer	2,749	24,311	15,689	274
Bornholdt	1,057	10,111	4,889	145
Boyd	311	730	5,270	29
Burnett	2,873	24,769	22,231	210
Burrton-Haury	1,209	40,986	9,014	333
Carmi	986	5,173	5,827	91
Chase	2,766	43,157	16,843	382
Chitwood	969	2,482	5,518	75
Crowther	422	1,149	3,851	43
Cunningham	430	5,905	2,894	122
Drach	489	2,240	3,760	45
Edwards	1,039	8,022	4,978	98
El Dorado	2,618	193,782	32,218	1,630
Fairport	726	18,538	3,462	150
Forrest Hill	316	860	2,140	32

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WHEELING MACHINE PRODUCTS COMPANY
WHEELING · WEST VIRGINIA

KANSAS (Continued)

	1946 production	January 1, 1947 — Cumulative	Estimated reserves	No. of wells
Frog Hollow	391	2,706	1,794	44
Geneseo	2,181	19,265	10,735	195
Gorham	1,891	30,959	19,041	281
Hall-Gurney	3,455	30,553	27,447	625
Hittle	580	6,661	3,339	61
Kraft-Prusa	5,257	24,782	29,218	487
Lindsborg	685	3,557	3,443	109
Lost Springs	456	6,852	3,148	175
Morel	1,098	4,105	7,895	66
Peace Creek	1,419	9,088	7,412	127
Profitt	329	330	970	18
Ray	1,213	5,609	5,391	86
Raymond	496	9,462	3,538	60
Richardson	676	7,795	5,205	60
Ritz-Canton	721	39,325	5,675	205
Russell	610	7,023	3,477	67
Silica	5,195	72,173	27,823	719
Sittner	397	1,208	2,792	46
Stoltenberg	2,747	22,142	17,858	295
Trapp	11,042	83,909	61,091	1,170
Voshell	519	26,431	4,569	75
Zenith	1,521	22,353	14,647	380
Miscellaneous	28,084	792,845	140,420	17,603
Total Kansas	96,579	1,663,815	579,746	27,245

PRODUCTION AND RESERVES—MICHIGAN

(In thousands of barrels)

Adams	1,317	7,259	5,541	64
Coldwater	1,592	2,614	8,586	74
Deep River	2,391	4,583	10,417	101
East Norwich	441	1,081	4,319	44
Essexville	335	776	2,624	34
Fork	1,386	5,245	4,515	61
Kawkawlin	702	3,492	4,008	149
Porter-Yost	653	42,629	4,371	311
Reed City	3,272	32,367	12,633	192
Miscellaneous	5,049	156,785	12,022	2,485
Total Michigan	17,138	256,831	69,036	3,515

PRODUCTION AND RESERVES—ILLINOIS

Albion	898	5,711	6,289	203
Allendale	539	2,896	5,104	176
Benton	927	18,769	6,231	231
Bible Grove	1,491	5,311	9,689	184
Boos, North	450	3,176	1,724	73
Boulder	483	2,537	2,467	32
Boyd	1,497	3,004	2,996	102
Boyleston	481	7,679	2,321	149
Brownsville	1,475	1,662	3,338	93
Bungay	427	1,702	1,298	61
Calhoun	717	1,270	2,730	58
Centralia	1,887	29,567	17,433	621
Clay City	5,309	45,999	20,001	1,122
Concord	618	1,903	2,197	71
Dale-Hoodville	1,479	22,720	7,380	398
Divide, West	699	1,782	2,118	44
Dix	403	4,923	4,077	80
Dundas	935	16,116	8,884	368
Gallagher	335	337	963	21
Herald	707	1,095	3,405	95
Ingraham, West	548	571	2,429	45
Inman, East	473	3,550	1,450	96
Iola	561	3,407	1,593	107
Johnsonville	1,206	18,473	6,527	299
Keensburg	663	11,144	4,356	324
Keenville	345	348	1,432	26
Louden	8,243	129,480	50,520	1,940
Marine	1,208	2,532	6,468	107
Markham City, West	334	335	665	26
Mattoon	4,287	4,784	20,216	353
Mount Carmel	868	6,761	4,739	345
New Harmony	2,866	34,984	15,006	737
Noble	1,883	21,541	6,449	263
Parkersburg	505	4,223	1,777	77
Patoka	1,651	6,745	10,255	129
Phillipstown	1,038	5,019	3,981	167
Roland	752	6,619	2,381	161
Rural Hill	510	9,243	2,757	192
Sailor Springs	418	2,650	3,350	104
Salem	5,967	198,193	40,807	2,393
St. James	706	9,235	4,765	176
Stokes	410	2,289	2,611	63
Thackery	661	1,196	1,054	45
Tonti	406	7,717	2,383	63
Walpole	420	3,488	1,812	66
Woodlawn	792	9,725	3,275	137
Bridgeport	2,272	236,285	18,715	3,511
Robinson	1,118	153,276	10,724	6,753
Miscellaneous	11,745	168,154	30,206	6,113
Total Illinois	74,613	1,240,126	373,348	29,000

STATEMENT OF CONDITION

December 31, 1946

RESOURCES

Cash and Due from Banks	$31,768,042.25	
U. S. Government Securities	73,826,576.70	
Other Bonds and Warrants	3,219,925.31	$108,814,544.26
Loans and Discounts		23,327,952.60
Overdrafts		2,044.83
Income Receivable Accrued		259,467.53
Prepaid Expenses		19,844.51
Stock in Federal Reserve Bank		180,000.00
Bank Premises		2,142,500.00
Customers' Liability under Acceptances		34,012.00
TOTAL		$134,780,365.73

LIABILITIES

Deposits		$124,871,633.56
Acceptances Executed		34,012.00
Income Collected, not Earned		78,181.46
Reserve for Taxes, Interest, etc.		471,519.56
Dividends Declared*		150,000.00
Capital—Common	$3,000,000.00	
Surplus	3,000,000.00	
Undivided Profits and Reserves	3,175,019.15	9,175,019.15
TOTAL		$134,780,365.73

*Payable $75,000 January 15, 1947 and $75,000 April 15, 1947

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Field Name, County, Location, and Initial Production of Discovery Wells

These data supplement the information on newly developed reserves tabulated on pages 170-185. They indicate significant facts upon which to base the year's exploration and development operations

CALIFORNIA

ALONDRA—Los Angeles, August; British-American Oil Producing Co. and The Texas Co., jointly, 1 Bodger, 22-3s-14w, IP 1,165 bbl., schist conglomerate, basement complex, 9,087-9,154 ft., TD 9,154 ft.

DUNNIGAN HILLS—Yolo, February; The Texas Co. 1 Hermle, 22-11n-1w, IP 3,050,000 cu. ft. gas, Chico, Cretaceous, 2,400-2,660 ft., TD 4,022 ft., commercial dry gas field, no crude oil.

DURHAM—Butte, July; Standard Oil Co. of California 1 Donahoe Fee, 6-20n-1e; IP 10,937,000 cu. ft. gas; Capay formation, Eocene age, 2,140-76 ft.; TD 6,000 ft., commercial dry gas field, no crude oil.

EAST DOMINGUEZ—Los Angeles, February; Shell Oil Co., Inc., 1 Dominguez Estate, 2-4s-13s; IP 325 bbl., probable Eighth Callender zone, Miocene age, 8,660-10,478 ft.; TD 10,478 ft.

EAST LOS ANGELES—Los Angeles, February; Richfield Oil Corp. 1 Union Pacific Unit, 4-2s-12w; IP 154 bbl., Puente, upper Miocene, 8,570-90 ft., 75 per cent cut; TD 9,629 ft.; PB 8,590 ft.

HYPERION-NORTH EL SEGUNDO—Los Angeles, July; Shell Oil Co., Inc., et al, 1 Six Companies, 2-3s-15w; IP 89 bbl., schist conglomerate, basement complex, 6,875-6,940 ft.; TD 7,033 ft. in schist; PB 6,940 ft.

INGLEWOOD-POTRERO—Los Angeles, October; Basin Oil Co. 1 Standard Brick, 28-2s-14w; IP 500 bbl., tight Potrero sand, Miocene age; TD 10,418 ft., perforated interval 9,935-10,418 ft., may later prove to be part of Potrero field.

JASMIN—Kern; Pacific Oil & Gas Co. 72 Cantleberry, 22-25s-27e; IP 76 bbl., Vedder sand, Miocene age, 2,769-94 ft.; TD 2,794 ft., about 20 miles from nearest pipe line and no connection yet.

LA MIRADA—Los Angeles, February; General Petroleum Corp. 1 Librown, 21-3s-11w; IP 130 bbl., tight Puente oil sand, Miocene age, 12,042-12,200 ft.; TD 12,200 ft.

LEFFINGWELL—Los Angeles, January; Standard Oil Co. of California 1 Lewis Community, 11-3s-11w; IP 67 bbl. from probable Repetto, Pliocene age, 6,875-6,900 ft.; TD 12,184 ft.; PB 6,920 ft.

OAT MOUNTAIN—Los Angeles, May; Standard Oil Co. of California 1 Wigdal, 19-3n-16w; IP 270 bbl., Tejon probable equivalent of Sespe sand, Eocene age, 9,285-9,385 ft.; TD 9,525 ft.; PB 9,385 ft.

ORELLA—Santa Barbara, December; Rothschild Oil Co. 1 Orella, 31-5n-30w; IP 5,000,000 cu. ft. gas, Sespe, Miocene age, 2,605-15 ft., 2,635-55 ft.; TD 3,119 ft.

SALT CREEK—Kern, January; Independent Exploration Co. 1 Temblor, 17-29s-21e; IP 19 bbl., Tulare-Etchegoin, 746-1,050 ft.; TD 2,920 ft.; PB 1,050 ft., deeper sand subsequently found has proved highly productive.

WINTERS—Solano, January; Shell Oil Co., Inc., 1 McCune, 29-8n-1e; IP 6,300,000 cu. ft. gas, Chico formation, Cretaceous age, 5,209-39 ft.; TD 5,528 ft.; PB 5,240 ft., commercial dry gas field, no oil produced.

NEW POOLS AND NEW PAYS

CASMALIA—Santa Barbara, April; Bell-Casmite Co. 2 Arellanes, 13-9n-35w; IP 320 bbl., Lospe formation, Miocene, perforated at intervals 4,090-4,800 ft.; TD 5,950 ft.; PB 4,800 ft.

CYMRIC, BOLTON POOL—Kern, January; H. H. Magee 2 Bolton, 22-29s-21e; IP 354 bbl., Miocene age, 5,030-40 ft.; TD 6,006 ft.; PB 5,075 ft.

CYMRIC, WOODY POOL—Kern, March; Superior Oil Co. 77-22 Woody, 22-29s-21e; IP 200 bbl., Point of Rocks sand, Eocene age, 5,038-5,340 ft.; TD 5,340 ft., first Eocene production, extremely high gas-oil ratio.

CYMRIC, PHACOIDES POOL—Kern, November; Standard Oil Co. of California 271-27 Weston, 27-29s-21e; IP 291 bbl., Phacoides formation, Miocene age, 3,960-4,030 ft.; TD 4,030 ft.

EAST LOS ANGELES, VAIL POOL—Los Angeles, February; Richfield Oil Corp. 1 Vail, 16-2s-12w; IP 1,560 bbl., Vail sand, Miocene age, 7,902-52 ft.; TD 7,952 ft.

KIRBY HILL, KIRBY POOL—Solano, May; Standard Oil Co. of California 1 Kirby Community, 24-4n-1w; IP 4,177,000 cu. ft. gas, Domengine, 1,810-2,110 ft.; TD 2,350 ft.; PB 2,110 ft.

KIRBY HILL, WAGENET POOL—Solano, November; Shell Oil Co., Inc., 1 Wagenet, 24-4n-1w; IP 3,500,000 cu. ft. gas, Domengine, 2,418-33 ft.; 2,438-42 ft.; TD 2,934 ft., commercial gas field, no oil produced.

MAINE PRAIRIE—Solano, July; Amerada 1-A Winship, 15-6n-2e; IP 7,210,000 cu. ft. gas from probable equivalent of Wineman sand, Eocene age, 4,790-4,805 ft.; TD 5,000 ft.; PB 4,825 ft.; this may prove to be a new commercial gas field instead of an extension well.

McKITTRICK, BELGIAN ANTICLINE—Kern, October; The Texas Co. 1 West Petroleum, 29-30s-22e, flow ungaged volume of natural gas from possible gas cap in formation of Miocene age, 5,140-73 ft.; TD 5,173 ft., standing shut in.

MOUNTAIN VIEW, SCHIST POOL—Kern, November; Western Gulf Oil Co. 1 Di Giorgio, 10-31s-29e; IP 306 bbl. from fractured and weathered schist basement, 5,886-6,163 ft.; TD 6,163 ft.

NEWHALL POTRERO, FIFTH ZONE POOL—Los Angeles, June; Barnsdall Oil Co. 53-5 Rancho San Francisco, 26-4n-17; IP 511 bbl., fifth zone, Miocene age, 8,680-8,920 ft.; TD 8,970 ft., although the sixth zone has been productive for some time, the intervening fifth zone has not heretofore been subjected to a production test.

NEWPORT, CALLENS POOL—Orange, July; Signal Petroleum Co. 1 Callens, 18-6s-10w; IP 500 bbl. from C zone, Miocene age, 3,570-3,705 ft., 3,800-10 ft.; TD 4,429 ft.; PB 3,860 ft.

NEWPORT, ANAHEIM UNION SUGAR POOL—Orange, July; A. W. Lyddon 7-1 Anaheim Sugar, 7-6s-10w; IP 951 bbl. from probable C zone, Miocene age, 5,500-50 ft.; TD 6,930 ft.; PB 5,550 ft.

RAMONA, BLACK POOL—Ventura, June; Bankline Oil Co. 102 Black, 13-4n-18w; IP 166 bbl. from Black sand, Miocene age, 2,190-2,332 ft.; TD 2,335 ft.

SALT CREEK, CARNEROS POOL—Kern, March; Independent Exploration Co. 2 Temblor, 17-29s-21e; IP 1,500 bbl. from Carneros sand, Miocene age, 2,790-2,828 ft.; TD 2,828 ft.

SUISUN, FONTANA FARMS POOL—Solano; Standard Oil Co. of California 4 Fontana Farms, 31-4n-1w; IP 2,570,000 cu. ft. gas from Nortonville, 2,855-2,990 ft.; TD 5,800 ft.; PB 3,100 ft., commercial gas field, no oil produced.

WEST PREMIER-POSO CREEK, KELLY POOL—Kern, June; Bender Drilling Co. 2 Kelly, 2-28s-27e; IP 130 bbl. probable Santa Margarita of Miocene age, 3,449-70 ft.; TD 3,572 ft.

EXTENSIONS

COLES LEVEE, NORTH—Kern; Richfield Oil Corp. 14-35 Kern County Land, 35-30s-25e; IP 1,041 bbl., Stevens sand, Miocene age, 9,538-9,760 ft.; TD 10,022 ft.; PB 9,760 ft.

CORNING—Tehama, June; Superior Oil Co. 1 Russell, 12-24n-3w; IP 6,050,000 cu. ft. gas from Tehama sand 1,520-70 ft.; TD 1,717 ft., commercial dry gas field, no oil produced.

DUNNIGAN HILLS—Yolo, April; Natural Gas Corp. 1 DuBois, 28-11n-1w; IP 1,227,000 cu. ft. gas, Chico, Cretaceous, 2,520-2,599 ft.; TD 2,880 ft.; PB 2,600 ft., commercial dry gas field, no oil produced.

ELK HILLS, STEVENS POOL—Kern, May; Standard Oil Co. of California operating for Navy Department, 344-24-Z, 24-30s-22e; IP 377 bbl., Stevens sand of Miocene age, 5,267-5,812 ft.; TD 5,812 ft.; top of zone consists of very tight oil sand with minimum of porosity and permeability.

RACE TRACK—Kern; General Petroleum Corp. 34-34 Charles, 34-29s-29e; IP 138 bbl., 4,685-90 ft.; TD 4,725 ft., this well good for 700 bbl. daily but production reduced in order to cut down gas-oil ratio, gas cap blanked off.

TEJON—Kern, May; British-American Oil Producing Co. 21-5 Tejon, 5-10n-19w; IP 68 bbl. from Chanac, Pliocene age, 2,647-2,703 ft.; TD 2,703 ft.

WEST MOUNTAIN—Ventura, September; F. E. Fairfield 1 West Mountain-Converse, 23-3n-21w; IP 146 bbl. from Sespe of Miocene age, 3,640-5,040 ft.; TD 5,040 ft.

WILMINGTON, 237 POOL—Los Angeles, January; Long Beach Harbor Oil Co. 2 Cedarholm, extended 237 zone into harbor area, Miocene age; IP 1,374 bbl., 5,700-5,940 ft.; TD 6,435 ft., conglomerate producing, schist was wet.

ROCKY MOUNTAIN AREA

WYOMING

DUBOIS—Fremont, February; Sinclair-Wyoming Oil Co. 1 Dubois Unit, NE NE NE 11-42n-107w; Embar sand, 2,073-2,155 ft.,

swabbed 94 bbl. in 24 hours after acidizing with 10,000 gal.

RIVER DOME—Washakie, March; Pure Oil Co. 1 Unit, NE NE NW 18-48n-92w; Embar sand, 10,020-55 ft., flowed 165 bbl. 43.5° gravity in 24 hours through ¼-in. choke after acidizing and extensive testing through various sized chokes.

CORLEY—Hot Springs, April; Continental Oil Co. 1 Van Noy, NE SW NW 3-43n-93w; Embar sand, 4,100-34 ft., pumped 192 bbl. in 24 hours.

CHURCH BUTTES—Uinta, April; Mountain Fuel Supply Co.-Union Pacific Railroad Co. 1 Government (Unit), C SW NW 8-16n-112w; Dakota sand 12,550-650 ft., on drill-stem test flowed gas at rate of 12,000,000 cu. ft. per day and 240 bbl. of oil, through ¼-in. choke. Test open 3 hours and 30 minutes flowed gas at rate of 28,633,000 cu. ft. per day through ⅜-in. tubing choke, tubing pressure 2,250 psi., casing pressure 2,425 psi. Before test, tubing pressure 5,300 psi. and casing pressure 5,375. Unofficial estimates open flow 50,000,000 to 60,000,000 cu. ft. and 400 to 600 bbl. of distillate per day.

TABLE ROCK—Sweetwater, April; Texas Co. 1 Unit, 1-18n-98w; sand in Laramie beds tentatively named Lance, 3,325-45 ft., tested 5,692,000 cu. ft. of gas per day, shutin pressure 1,225 psi.

SKULL CREEK—Weston, April; Morton & Siegel 1 State, C SW NE 16-44n-62w; Muddy sand, 3,331-65 ft., pumped 12 bbl. per day.

NEW PAYS

SOUTH ELK BASIN—Park; Continental Oil Co. 3 Ida Goodstein, NE SW 20-57n-99w; Dakota sand, 5,462-72 ft., flowed gas at rate of 5,900,000 cu. ft. per day; an upper pay passed up in drilling to Tensleep in discovery well.

BAILEY—Carbon, January; Sinclair-Wyoming Oil Co. 3 Unit, NW NE NE 21-26n-89w; Tensleep sand, 6,966-7,320 ft., swabbed at rate of 228 bbl. per day.

BLACK MOUNTAIN—Washakie, October; The Texas Co. 3 State, NW NE SE 36-43n-91w; Madison lime, 3,815-3,936 ft., swab test last 8 hours made 161 bbl. of oil and 77 bbl. of water.

ELK BASIN—Park, October; Stanolind Oil & Gas Co. 38-M Unit, NE SE NE 24-58n-100w; Madison lime, 4,340-5,013 ft., not completed, testing lower section with approximately 340 ft. of good pay back of casing.

EXTENSIONS

BEAVER CREEK—Fremont, January; Stanolind Oil & Gas Co. 2 Beaver Creek, NW NW SW 11-33n-98w; Lakota sand 8,043-8,108 ft., tested 8,100,000 cu. ft., well open 2½ hours.

CROOK'S GAP—Fremont, March; General Petroleum Corp. 72-19 Pat., SW NE NE 19-28n-92w; Lakota sand, 5,218-54 ft., flowed 200 bbl. net first 24 hours.

BIG MUDDY—Converse, July; Dyer & Rice 1 Barber, NW SE 36-33n-76w, Dakota sand, 4,383-98 ft., estimated 50 bbl. per day on pump.

ZIMMERMAN BUTTE—Hot Springs, October; Pacific Western Oil Corp. and Frontier Refining Co. 6 Unit, NW SW SW 36-44n-93w; Embar sand 6,344-75 ft., flowed 162 bbl. in 24 hours.

COLORADO

ELK SPRINGS—Moffat, October; Continental Oil Co. 1 Smith, SW SE SW 30-5n-98w; Weber sand, 5,087-6,140 ft., testing, estimated at 100 to 150 bbl.

NEW PAY

RANGELY—Rio Blanco, May; Continental Oil Co. 2 Rooth, C SW SW 15-2n-103w; Shinarump sand, 6,060-6,110 ft., flowed 847 bbl. 38.5° gravity oil 24 hours through ½-in. choke on tubing.

EXTENSIONS

RANGELY—Rio Blanco, January; Continental Oil Co. 1 Rooth, C NW SW 15-2n-103w; Weber sand, 6,320-6,805 ft., flowed 864 bbl. 1-in. choke in 24 hours, outpost on west; Algord Oil Co. 2 Guiberson, C NE NE 18-2n-102w; Weber sand 6,410-65 ft., pumped 281 bbl. in 24 hours after shot, outpost on north; Stanolind Oil & Gas Co. 1 Hefley, SW NW NW 2-1n-102w, Weber sand 5,641-6,157 ft., flowed 402 bbl., outpost on southeast.

UTAH

CRESCENT—Grand, February, Utah Drilling & Development Co. 2 State, NW NW NE 16-22s-19e; Dakota (?) sand 1,123-1,215 ft., pumped 25 bbl. per day.

NORTHWEST NEW MEXICO

BARKER CREEK—San Juan; Southern Union Production Co. 17 Barker Creek, C NW NW 27-32n-14w; gas sand in Paradox of lower Pennsylvanian age topped at around 9,002 ft. and drilled to 9,303 ft. and completed for estimated 20,000,000 cu. ft. per day.

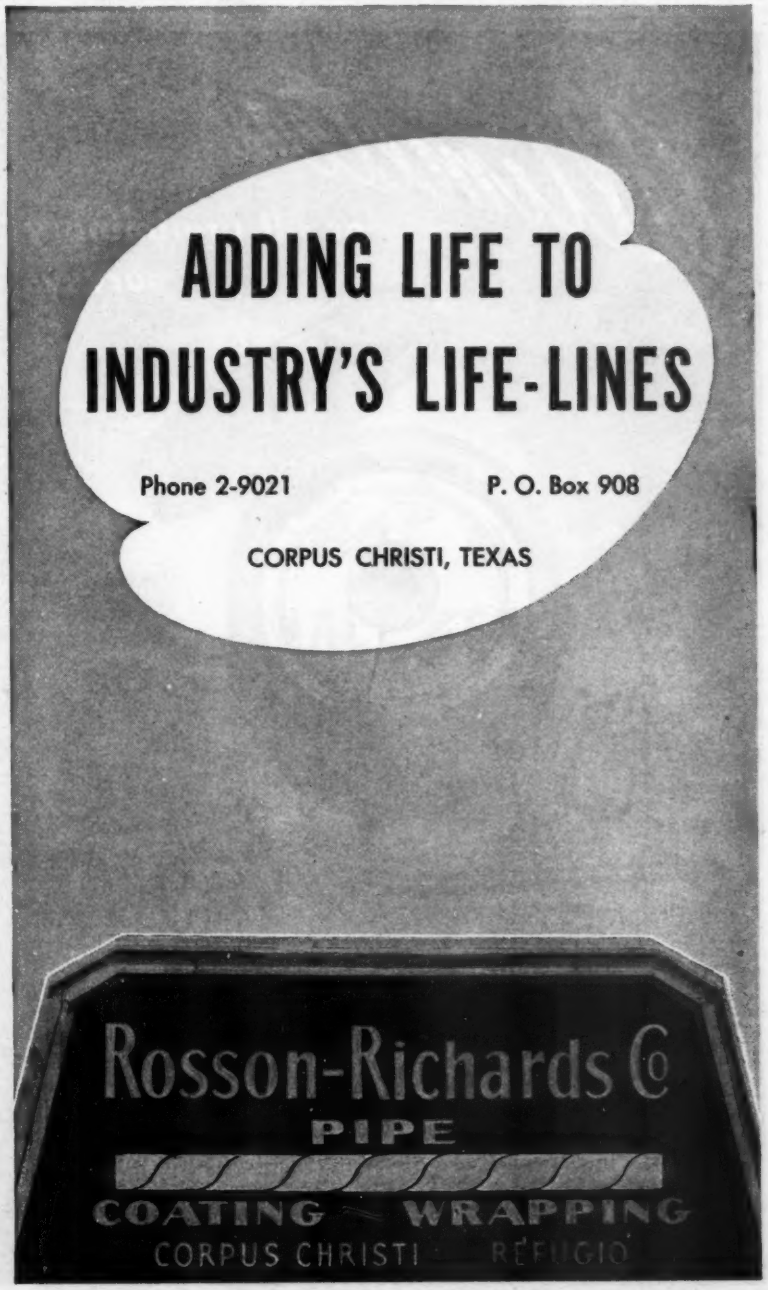
MONTANA

RATTLESNAKE BUTTE—Petroleum, June; H. H. Swartz Jr. 1 Government, C SW SE 22-13n-28e; second Cat Creek sand, 2,780-2,810 ft., pumped 60 bbl. per day.

WEST KEVIN—Toole, September; Big West Oil Co. 1 Profrock, C NW NW 7-34n-4w; Ellis-Madison contact 2,361 ft. swabbed 15 bbl. per day.

NEW PAYS

CAT CREEK (West Dome)—Petroleum,



April; Ralph Chamberlin 12-A Rhens, NE NE SE 9-15n-29e; old well drilled deeper, Ellis sand 1,740-53 ft., flowed 50 bbl per day.

CAT CREEK (East Dome)—Garfield, April; William Hanlon 1 Government, SE NE SW 6-14n-31e; Ellis sand 1,815-27 ft., pumped 120 bbl. per day.

EAST UTOPIA—Liberty, October; The Texas Co. 2 Nick Laas, NW NE SW 14-33n-4e; Jefferson sand in Devonian formation, estimated 20,000,000 cu. ft. of gas per day, after plugging back from 500 ft. in the Cambrian to sand at 3,559-3,775 ft.

EXTENSIONS

CUT BANK—Glacier, October; Carter Oil Co. 1 Doorenhoe, C NE NW 12-36n-6w; Madison lime at 3,163-77 ft., pumped 80 bbl. per day, outpost on northwest of Madison lime production.

EAST TEXAS

FURRH—Harrison, May; R. W. Williams 1 J. M. Furrh, Frances O'Neal Survey, 2 miles north of West Elysian field, gas sand, 6,294-6,308 ft., 1,480,000 cu. ft. gas

LASSATER—Marion, June; Magnolia Petroleum Co. 1 Orr, R. B. Fowler Survey, 5 miles northwest Lassater, Travis Peak, 7,568-77 ft., IP 116 bbl.

MOUNT SYLVAN—Smith, May; Humble Oil & Refining Co. 1 T. J. Pool, William Sanders Survey, 4½ miles west Mt. Sylvan, Paluxy, 7,339-52 ft., IP 522 bbl.

NORMAN PAUL—Wood, August; Bobby Manziel 1 A. L. Amasin, Hazard Anderson Survey, 5 miles northeast Quitman, Woodbine, 5,237-46 and 5,466-88 ft., IP 253 bbl.

WILLIAM R. WISE—Cherokee, August; W. W. Wise and Delta Drilling Co. 1 J. O. Hugghins, Levi Jordan Survey A-28, 8 miles southwest Rusk, Woodbine, 5,107-16 ft., IP 90 bbl.

UNNAMED—Rusk, March; Delta Drilling Co. 1 C. C. Rayford, James Smith Survey, 3 miles south Henderson, Travis Peak, 7,310-7,464 ft., IP 22 bbl. distillate, 1,035,000 cu. ft. gas.

UNNAMED—Marion, January; Lacy and Allied Oil Co. 1 Scott, Alexander Johnson Survey, 2½ miles southwest Jefferson Hill, 5,904-14 ft., IP 1,640,000 cu. ft. gas.

UNNAMED—Marion, April; M. A. Freeman 1 L. Stevenson, J. Perry Survey, 2 miles northwest Jefferson, Lower Pettit, 6,495-6,507 ft., IP 165 bbl.

UNNAMED—Leon, August; Carter-Gragg Oil Co. 1 Hammett estate, Henry Smith Survey, 10 miles south Oakwood, Woodbine, 5,786-96 ft., IP 33,000,000 cu. ft. gas.

UNNAMED—Cherokee, March; Tom G. Shaw 1 Bolton, Chas. L. Widgeon Survey, 3½ miles southwest Summerfield, Woodbine, 4,171-74 ft., IP 6 bbl.

UNNAMED—Bowie, May; Barnsdall Oil Co. et al 1 Pickering, R. E. Sevey Survey, 4 miles southwest Texarkana, Smackover, 7,030-85 ft., IP 59 bbl. distillate, 3,000,000 cu. ft. gas.

EXTENSION

FAIRFIELD—Freestone, January; Barney Carter 1 F. E. Hill, H. Sheppard Survey, Woodbine, 4,174-84 ft., IP 5 bbl. distillate, 27,000,000 cu. ft. gas.

NEW PAYS

CARTHAGE—Panola, March; Skelly Oil Co. 1 S. E. Matthews, Wm. McFadden Survey, Lower Pettit, 6,314-88 ft., IP 170 bbl.

HUXLEY—Shelby, March; Humble Oil & Refining Co. 1 Pickering, S. Francois Survey, Pettit, 6,606-28 ft., IP 225 bbl. distillate, 15,000,000 cu. ft. gas.

MANZIEL—Wood, August; Rogers Lacy and Carraway 1-A Shamburger, James Moore Survey, sub-Clarksville, 4,146-66 ft., IP 113 bbl.

MANZIEL—Wood, August; Magnolia Petroleum Co. 2 Malone-Taylor Unit 2, John Polk Survey, Woodbine, IP 261 bbl.

OPELIKA—Henderson, March; Lone Star Producing Co. 1 Ira Buckalen, Adrian Anglin Survey, Rodessa, 8,827-53 ft., IP 330 bbl.

WASKOM—Harrison, August; E. C. Johnston 1 Cargill, Simpson Holloway Survey, 16 miles east Marshall, pay zone 5,931-44 ft., IP 527 bbl.

WEST TEXAS

Block 12—Andrews, April; The Texas Co. 1-P State (formerly Atlantic Refining Co. 1-B University, drilled to 4,965 ft.), Section 15, Block 12, University Lands, 19 miles southwest Andrews, Clear Fork, 7,170-7,250 ft., IP 159 bbl.

CLARK—Glasscock, October; Shell Oil Co., Inc., 1 A. C. Clark, Section 5, Block 32, T&P Survey, Chapel lime of Mississippian age, 9,740-55 ft., IP 238 bbl.

FAIRVIEW—Howard, January; Bruce C. Clardy 1 fee, Section 4, Block 33, T&P Survey, 6 miles northwest Big Spring, Clear Fork, 3,100-51 ft., IP 28 bbl.

HUDDLESTON—Fisher, August; Skelly Oil Co. 1-A Huddleston, Section 11, Block 19, T&P Survey, 15 miles northeast Sweetwater, Palo Pinto, 4,345-4,405 ft., IP 696 bbl.

IRISH—Hale, May; Stanolind Oil & Gas Co. 1 Lee Irish, Section 18, HE&WT Survey, Clear Fork, 5,860 ft., IP 354 bbl.

JAMESON—Coke, December; Sun Oil Co. 1 A. Jameson, Section 253, Block 1-A, H&TC Survey, 1 mile southeast Old Silver, Pennsylvania, 6,225-45 ft., IP 168 bbl.

KAYSER—Ector, December; Stanolind Oil & Gas Co. 1 Kayser, Section 34, Block 43, T&P Survey, 1½ miles west of South Cowden, Pennsylvanian, 8,495-8,525 ft., IP 168 bbl.

MORROW—Menard, August; Warren Petroleum Co. 1 Mrs. Ruby Russell, Section 18, S. Wallick Survey, 6 miles northeast Fort McKavett, Canyon lime, 2,254-2,307 ft., IP 21 bbl.

NELSON—Andrews, June; Shell Oil Co., Inc. 1 A. Nelson, Section 8, Abstract 40, PSL Survey, 25 miles west Andrews, Elenburger, 10,384-606 ft., IP 479 bbl.

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POLAR—Kent, May; Humble Oil & Refining Co. 1 Lida Vick, Section 45, H&GN Survey, 20 miles north of Snyder, Ellenburger, 7,775-7,810 ft., IP 207 bbl.

SPRABERRY — Dawson, January; Humble Oil & Refining Co. 1 S. E. Lee, Section 47, T&P Survey, 12 miles southeast Lamesa, San Andres, 3,720-95 ft., IP 167 bbl.

SIMS—Andrews, December; Humble Oil & Refining Co. 2 H. O. Sims et al, Section 25, Block A-39, PSL Survey, extreme west central part of county, Ellenburger, 10,466-531 ft., IP 704 bbl.

UNNAMED—Upton, September; Gilcrease Oil Co. 1 University, Section 19, Block 14, University Lands, 12 miles southwest Rankin, 2 miles north Crockett, Grayburg, 1,428-1,512 ft., IP 6 bbl.

UNNAMED—Sutton, May; Shell Oil Co., Inc. 1 Duke Wilson et al, Section 38, TW&NO Survey, 19 miles southeast Sonora, 28 miles south Page, Strawn, IP 9,200,000 cu. ft. gas.

UNNAMED — Pecos, March; William Y. Penn 1 W. T. Shearer, Section 41, H&GN Survey, 4 miles west Buena Vista, Yates 1,940-60 ft., IP 36 bbl.

UNNAMED—Crockett, July; Moore Exploration Co. 1 Halff-Bivens, Section 65, Block 1, I&GN Survey, 2½ miles southwest Norlke, Glorietta, 2,692-2,710 ft., IP 3 bbl.

UNNAMED—Crane, January; Humble Oil & Refining Co. 1 Nellie M. Lucker, Section 23, Block 1, H&TC Survey, 1½ mile northwest McKee, Waddell 5,700-20 ft., IP 6,300,000 cu. ft. gas and 60 bbl. distillate.

NEW PAYS

EMPEROR DEEP—Winkler, March; Texas Pacific Coal & Oil Co. 1 Brown Altman 4, Section 25, PSL Survey, Holt 4,765-4,810 ft., IP 265 bbl.

FUHRMAN—Andrews, September; Placid Oil Co. and Gulf Oil Corp. 1 Thornberry, Section 5, Abstract 42, PSL Survey, Ellenburger, 11,945-55 ft. IP 33 bbl.

FULLERTON — Andrews, January; Mid-Continent Petroleum Corp. 3-11 University, Section 29, University Lands, Ellenburger, 10,580-630 ft., IP 1,974 bbl.

GOLDSMITH — Ector, March; Stanolind Oil & Gas Co. 3-Q Scharbauer, Section 12, PSL Survey, Clear Fork, 6,090-6,185 ft., 6,200-90 ft., IP 396 bbl.

NORTH GOLDSMITH—Ector, April; Stanolind Oil & Gas Co. 1 Grisham-Hunter Corp. (formerly Grisham-Hunter 1-B Cowden, drilled to 6,499 ft.), Section 10, T&P Survey, Devonian, 7,919-55 ft., IP 445 bbl.

HOWARD-GLASSCOCK — Howard, January; Continental Oil Co. 1-D-133 Settles, Section 133, W&NW Survey, Strawn, 8,910-9,100 ft., IP 30 bbl.

HUDDLESTON—Runnels, March; Gillespie & Sons 1 B. N. Wilke, Section 1, Day Land & Cattle Co. Survey, Canyon, 2,462-90 ft., IP 19 bbl.

KEYSTONE — Winkler, April; Stanolind Oil & Gas Co. 1 Mack Taylor, Section 8, PSL Survey, Devonian, 8,040-8,135 ft., IP 617 bbl.

MARTIN—Andrews, March; Humble Oil & Refining Co. 2 Parker, Section 23, PSL Survey, Ellenburger, 8,850-65 ft., IP 1,594 bbl.

MONAHANS—Winkler, August; Stanolind Oil & Gas Co. 8 Sealy-Smith, Section 48, G&MMB&A Survey, Glorietta, 5,180-5,224 ft., IP 421 bbl.

PAGE—Schleicher, June; Cooper 1-K Kay, Section 38, GH&SA Survey, Strawn 5,520-70, 5,610-40 ft., IP 1,089 bbl.

PENWELL—Ector, April; Phillips Petroleum Co. 1 Edison, Section 25, PSL Survey, Ellenburger, 8,920-50 ft., IP 1,065 bbl.

TXL—Ector, July; Phillips Petroleum Co. 1-A. E. Phillips-TXL, Section 39, T&P Survey, Clear Fork, 5,615-30 ft., IP 139 bbl.

TXL—Ector, June; Shell Oil Co., Inc., 1-E Thomas, Section 32, T&P Survey, Wolfcamp 7,545-7,695 ft., IP 16 bbl.

EXTENSIONS

BLOCK 12—Andrews, September; Superior Oil Corp. 3-12-A University, Section 22, University Lands, Clear Fork, 7,219 ft., IP 736 bbl.

FULLERTON — Andrews, May; Superior Oil Corp. 1 Eva Coopwood, Section 4, PSL Survey, Clear Fork, 6,885-6,997 ft., IP 691 bbl.

FULLERTON—Andrews, June; Stanolind Oil & Gas Co. 1-A Lotus Oil Co., Section 16, PSL Survey, Clear Fork, 6,830 ft., IP 159 bbl.

FULLERTON — Andrews, April; Phillips Petroleum Co. 1 University, Section 31, University Lands, Devonian, 8,550-8,700 ft., IP 1,104 bbl.

DOSS—Gaines, August; Humble Oil & Refining Co. 1 Cunningham, Section 7, PSL Survey, Clear Fork, 7,000-60 ft., IP 388 bbl.

GARZA—Garza, August; Brown, Brown & Comanche 1-A Post, Section 1,228, J. V. Massey Survey, lime, 2,770 ft., IP 92 bbl.

JONES RANCH—Gaines, April; Amerada Petroleum Co. 1-C Jones, Section 2, PSL Survey, Devonian, 11,192-265 ft., IP 468 bbl.

LEVELLAND—Hockley, March; Stanolind Oil & Gas Co. 1 Veretto, Val Verde CSL Survey, San Andres, 4,760-4,853 ft., IP 343 bbl.

McCAMEY — Upton, January; Gulf Oil Corp. 1-D Farley, Section 12, CCSD&RGNG Survey, Yates, 2,290-2,358 ft., IP 143 bbl.

MARTIN (ELLENBURGER) — Andrews, April; Atlantic Refining Co. 1-A-11 University, Section 1, University Lands, Ellenburger, 8,680-8,740 and 8,810-60 ft., IP 328 bbl.

SEALY SMITH — Winkler, May; Ralph Lowe 1 Sealy Smith, Section 71, G&MMB&A Survey, Glorietta, 5,220-80 ft., IP 300 bbl.

SHANNON—Crockett, January; J. I. and P. D. Moore 1-B Hoover, Section 18 GC&SF Ry. Co. Survey, limestone, 2,343-66 ft., IP 152 bbl.

TXL—Ector, June; The Texas Co. 1-F

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Fraser, Section 39, T&P Survey, Ellenburger, 9,750-86 ft., IP 1,451 bbl.

TXL—Ector, February; The Texas Co. 1-D Fraser, Section 27, Ellenburger 10,790-890 ft., IP 1,700 bbl.

TXL—Ector, September; J. W. Murchison et al 1 George C. Fraser, Section 7, T&P Survey, Devonian, 8,510-63 ft., IP 29 bbl.

WESTBROOK—Mitchell, April; Hickok & Reynolds 1 Floyd A. Langley, Section 25, T&P Survey, Clear Fork, 2,259-3,151 ft., IP 56 bbl.

SOUTHEAST NEW MEXICO

NO NEW FIELD DISCOVERIES

EXTENSIONS

DRINKARD—Lea, March; Gulf Oil Corp. 1 Hugh, Section 14-22s-37e, Glorietta, 5,120-60 ft., IP 62 bbl.

PENROSE-SKELLY—Lea, October; N. G. Penrose 3 Hinton, SE SW 12-22s-37e, lime, 5,160-70 ft., IP 7 bbl.

SOUTH HIGH LONESOME—Eddy, January; Forest E. Levers 1-B Levers, Section 34-16s-29e, Grayburg, 2,630-75 ft., IP 63 bbl.

NEW PAYS

SKAGGS—Lea, May; Continental Oil Co. 4-B-23 Skaggs, Section 23-20s-37e, Clear Fork 6,760-6,840 ft., IP 111 bbl.

SOUTH CENTRAL TEXAS

CARRIZO PARK—Dimmit, June; Humble Oil & Refining Co. 1 Mrs. Kate Bradshaw, T&NO Sur. 15; IP 30 bbl., perforations 2,795-2,807 ft.

COUNTY LINE—McMullen, January; J. W. Gorman 1 Roos Brothers, 20 miles northeast of Freer, in AB&M Sur., Sec. 75, 1½ miles south of South Campana field; IP 2,200,200 cu. ft. gas, Jackson, perforations 1,929-34 ft. and 1,945-50 ft.

FASHING—Atascosa, July; H. R. Smith and Skinner & Eddy Corp. 1 G. F. Wiegang, 3¼ miles northwest of Fashing, A. S. Donovan Sur.; IP 170 bbl., Wilcox, perforations 3,771-77 ft.

HOLCOMB—Milam, March; R. L. Holcomb et al 2 J. L. Byrd, 1 mile northeast of Sharp, J. J. Acosta Grant; IP 55 bbl., Austin chalk, 1,220-40 ft.

JOURDANTON GAS—Atascosa, January; Humble Oil & Refining Co. 1 Henry Schorsh, Edward Estes Sur., Atascosa Colony Farms Subdivision, ¾ mile southwest of Jourdanton; IP 5,000,000 cu. ft. gas, Edwards lime, perforations 7,263-95 ft.

JOURDANTON OIL—Atascosa, April; Humble Oil & Refining Co. 1 A. N. Moursund, 1 mile southwest of Jourdanton, northeast of Humble 1 Schorsch, gas discovery well; IP 50 bbl., Edwards lime, 7,362-85 ft.

MUIL—Atascosa, February; Quintana Petroleum Corp. 1 C. Muil, J. C. Mattison Sur. 467, 11 miles southeast of Pleasanton, (OWDD); IP 3,000,000 cu. ft. gas and 50 bbl condensate, Edwards lime, open hole, 8,870-9,012 ft.

ROSILLA CREEK—Bexar, March; Harry S. Stahl 1 Pablo Verjeda, N. Montaya Sur. 21, 9½ miles southeast of San Antonio; IP estimated 2 bbl., Navarro sand, 845-50 ft.

WILLOW FLAT—Milam, April; McCrary Oil Co. 1 J. R. and M. A. McCrary, Niles F. Smith Sur., 8 miles west of Calvert townsite; IP 95 bbl., Nacatoch sand, 2,104-20 ft.

UNNAMED—Atascosa, June; Quintana Petroleum Corp. 2 C. Muil, J. C. Mattison Sur. 467, 4 miles northeast of McCoy and 9 miles north of Campbellton, 1,320 ft. southwest of 1 C. Muil discovery gas-condensate well; IP 64 bbl., Upper Edwards lime, perforations 8,996-9,005 ft. Note: On September 18, 1946 hearing on application for discovery oil allowable rights was indefinitely postponed by the Railroad Commission because applicant failed to appear when hearing was called.

UNNAMED—Guadalupe, August; United North & South Development Co. 1 J. F. Webb, 4½ miles southwest of Luling, 2 miles southwest of Day field, James Hodges Sur.; IP 175 bbl., Serpentine, perforations 2,421-53 ft., and Austin chalk, perforations

HELICOID GAGES
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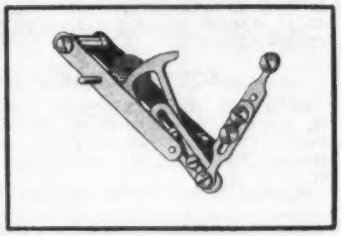
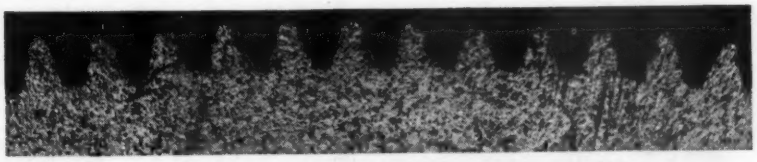
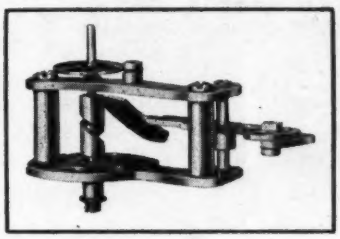
HERE'S WHY:



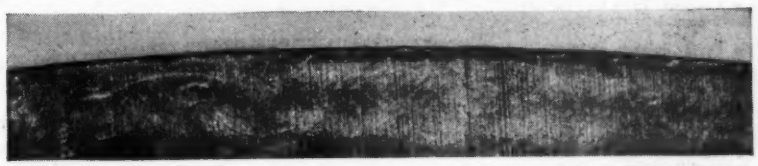
The movement of the ordinary pressure gage operates by means of a toothed segment and a spur gear as shown at right.



Magnified 12 times, the teeth of this new, unused sector are jagged – anything but uniform. Pinion teeth are cut the same way. Friction, wear and consequent inaccuracies are caused by these rough surfaces rubbing together.



Helicoid Gage movement has a polished, graphited Bakelite cam and a polished helicoid roller – instead of sector and pinion.



Cam of Helicoid movement magnified 12 times, shows smooth, polished surface. Helicoid roller surface is also highly polished. Longer wear and smoother operation result from these two polished surfaces in rolling, point contact.

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HELICOID GAGE DIVISION
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TRADE MARK

2,485-2,505 ft. Note: Production did not hold up and this well was abandoned.

UNNAMED—McMullen, August; Dee Davenport 6-A Annie Dolph et al, L. Musquez Sur. 12, 14 miles southeast of Tilden and 8 miles southwest of Ezzell field; IP 5 bbl. from open hole, 1,379-90 ft.

NEW PAYS

PEARSALL—Frio, July; Highland Oil Co. 12 Halff & Openheimer, J. H. Gibson Sur. 15; IP 36,000,000 cu. ft. gas, Navarro, perforations 4,273-79 ft.

SOUTH TEXAS

HOLLAND (CORTEZ)—Starr, June; W. H. Holland 1 Roos-Bennett, Share 100, Porcion 93, 12 miles northeast of Rio Grande City; IP 147 bbl., perforations 2,961-67 ft.

HIRSCH—Webb, April; Sun Oil Co. 2 Isaac Hirsch et al, Sur. 2030, 1,416 ft. northeast of Sun 1 Hirsch, junked hole; IP 1,400,000 cu. ft. gas, Wilcox, perforations 6,905-15 ft.

NORTH ALBERCAS—Webb, January; Blanco Oil Co. and Al Buchanan 1 A. M. Bruni Estate, Albercas Grant, Block 25, Brown Subdivision, 8.3 miles southwest of Bruni; IP 81 bbl., Jackson sand, 2,313-18 ft.

NORTH PETERS—Duval, October; Humble Oil & Refining Co. 1-F Dallas Joint Stock Land Bank, GB&CNG Sur. 187; IP 18 bbl., perforations 2,092-98 ft.

SOUTH RINCON—Starr, August; W. D. Kennard 1 M. M. Garcia, Block 29, Tract 215, Share 12, Porcion 90; IP 102 bbl., perforations 3,500-04 ft.

UNNAMED—Webb, June; Dulaney Oil Co. 3 State of Texas, State Sur. 838, 1 mile southwest of Aviators field; IP estimated 250,000 cu. ft. gas, open hole, 1,501-60 ft., no shots.

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- Large number of conduit opening combinations.
- Available in many single pole circuit combinations.
- Additional breakers can be readily added in field.
- Corrosion Resisting operating shafts and mechanism.
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  (1) Faster opening action on short circuits.
  (2) Full Time Delay on Overloads.
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UNNAMED—Duval, August; Edwin B. Cox and Jake L. Hamon 1 Leila Peters, 14 miles southwest of Freer, 1 mile southeast of East Peters field, BS&F Sur. 194; IP 8,500,000 cu. ft. gas, perforations 2,612-18 ft.

UNNAMED—Duval, August; H. H. Howell 3 Lizzie Singer, 5 miles north of Benavides, G. Cumberland Sur. 4; IP 248,500 cu, ft, gas, perforations 1,683-1,705 ft.

UNNAMED—Webb, August; Killam-Hurd 1 J. G. Garcia Heirs, 5½ miles south of Mirando City, in Los Ojuelos Grant; IP 109 bbl., perforations 1,872-74 ft.

UNNAMED—Starr, December; Daubert-Achning 1 M. Villareal, in Santa Cruz Grant, 6,600 ft. southeast of Kelsey field, IP 152 bbl. through perforations at 5,961-67 ft.

NEW PAYS

HOLLAND (CORTEZ)—Starr, July; W. H. Holland 2 Roos-Bennett, Share 100, Porcion 93; IP 66 bbl.; top of pay 2,910 ft.

KELSEY—Starr, August; J. O. Clark, Jr., 2-A Gonzales Unit, Santa Teresa Grant, on south flank of field; IP 149 bbl., perforations 5,709-18 ft. (Operator has designated this as "San Ysidro" field).

LA REFORMA—Starr, February; Baldridge & King 1 A. Guerra Estate, San Jose Grant, 2 miles south of La Reforma; IP 146 bbl., Yegua, perforations 6,145-48 ft.

NORTH ALBERCAS—Webb, May; Blanco Oil Co. and Al Buchanan 5 A. M. Bruni Estate, Block 28, Brown Subdivision of Albercas Grant; IP gas well, no gage, shutin, Pettus sand, perforations 2,521-27 ft.

PIEDRAS PINTAS—Duval, January; H. H. Howell 1 George B. Parr, Sur. 185, 2 miles east of Benavides; dual completion, IP 246 bbl., Yegua, perforations 3,798-3,804 ft., IP 271 bbl., Yegua, perforations 3,990-4,008 ft.

YTURRIA—Starr, September; Sun Oil Co. 3 B. G. de Garcia, Porcion 98; IP 1,310,000 cu. ft. gas, no gage on condensate, Frio, perforations 6,318-33 ft.

EXTENSIONS

BOYLE-RINCON—Starr, June; George H. Echols 2 M. M. Garcia, Porcion 90, 14 miles northeast of Rio Grande City; IP 20 bbl., Frio, perforations 3,394-3,402 ft.

NORTH SUN—Starr, July; Sun Oil Co. 1 Lee M. Green, 2 miles southeast of North Sun field, Santa Teresa Grant; IP 113 bbl., perforations 4,729-30 ft.

SEVEN SISTERS—Duval, December; Hickok & Reynolds, Inc. 8-C J. F. Welder Heirs, 1 mile west extension, in Samuel Alexander Survey 102, IP 3,800,000 cu. ft. gas from Loma Novia sand at 2,521-27 ft.

NORTH CENTRAL TEXAS

CAUDLE—Montague, March; Youngblood & Foree 2 Joe Benton, A. A. Lewis Survey, 3 miles north and 1½ mile west Stoneburg, Caddo 6,132-42 ft.; IP 3,172 bbl.

HANBY—Grayson, July; The Texas Co. 2 Hanby, Samuel Stewart Survey, 10 miles northwest Gordonville, Strawn 1,665-97 ft.; IP 522 bbl.

HEARD—Clay, January; Continental Oil Co. 1-C Heard, TE&L Survey, 3 miles southeast Joy, Ellenburger 6,468-96 ft.; IP 1,168 bbl.

KENDALL—Young, February, Hanlon-Buchanan, Inc., 1 Lena Kendall, BS&FA Survey, 3 miles northwest Eliasville, Caddo 3,466-81 ft.; IP 315 bbl.

KILLIAM—Young, July; A. R. Dillard 1 Marietta Killiam, Section 211, TE&L Survey, 2 miles south Olney, Mississippi, 4,945-60 ft.; IP 280 bbl.

NATIONAL VICTORY—Wilbarger, June; National Associated Oil Co. 1 Schomker, H&TC Survey, 6 miles southeast Vernon, Canyon 3,527-40 ft.; IP 337 bbl.

TRUSCOTT—Knox, June; Cities Service Oil Co. 1 Doris Mulkey, H&TC Survey, 2 miles south Truscott, Bend 6,224-48 ft.; IP 10 bbl.

UNNAMED—Archer, May; Norwood Drilling Co. et al 1 Harris, Harris Subdivision,

6½ miles west Archer City, Cisco 1,122-26 ft.; IP 45 bbl.

UNNAMED—Archer, June; Cochran & Cain 2 Virgil Seay, Lot 69, Harris Subdivision, 6 miles west Archer City, Cisco 1,148-56 ft.; IP 10 bbl.

UNNAMED—Archer, June; Grace & Grace 1 Edwards, G. C. Bruner Survey, 15 miles south Wichita Falls, Caddo 5,495-5,500 ft.; IP 35 bbl.

UNNAMED—Archer, June; Harvey Drilling Co. 1-A Abercrombie, F. M. Taber Survey, 7 miles west Anarene, Cisco 1,273-79 ft.; IP 12 bbl.

UNNAMED—Archer, July; Clyde Gibson 2-A McCrory, ATNCL Survey, 2 miles west and 1 mile north Luke Wilson, Cisco 1,461-67 ft.; IP 50 bbl.

UNNAMED—Cooke, September; Douglas Helms 2 Lee Blocker, J. Rodriquez, 2 miles south East Myra, unidentified pay 1,582 ft.; IP 70 bbl.

UNNAMED—Jack, June; Continental Oil Co. 1 W. H. Heath, C. A. Beaty Survey, 3 miles east Perrin, Bend 4,431-42 ft., 1,070,000 cu. ft. gas.

UNNAMED—Jack, September; Continental Oil Co. 1-C Cherryhomes, Florida Payne Survey, 3 miles north and 1 mile west Joplin, Bend conglomerate 4,577-90 ft., 176,-000 cu. ft. gas.

UNNAMED—Jack, July; Hanlon-Buchanan, Inc., 1 B. J. Moore, BBB&C Survey, 3½ miles south and 6 miles east Antelope, Ellenburger 5,985-6,003 ft.; IP 11 bbl.

UNNAMED—Montague, September; Continental Oil Co. 1-B Lewis, Nancy B. Ussery Survey, 2½ miles southeast Hildreth, Bend conglomerate 6,348-56 ft.; IP 1,292 bbl.

UNNAMED — Throckmorton, October; Fred Manning 2 McKnight "D," Day Land & Cattle Co. Survey, 6 miles southeast Throckmorton, Caddo 4,037-42 ft.; IP 960 bbl.

UNNAMED—Wilbarger, February; W. T. Waggoner 1 Waggoner, H&TC Survey, 6½ miles west and 1½ miles east Brogertown, Ellenburger 4,502-16 ft.; IP 528 bbl.

UNNAMED—Wilbarger, September; E. C. Lawson 2 W. J. Baker, Section 85, H&TC Survey, 6 miles south Vernon, Canyon 3,230-3,310 ft.; IP 93 bbl.

UNNAMED—Young, September; J. T. Cox et al 1 Davis, SPRR Survey A-264, 4 miles north Eliasville, Caddo 3,558-61 ft.; IP 70 bbl.

UNNAMED—Young, July; Robert G. Davis 1 Baldwin-Lockett, Section 207, TE&L Survey, 4 miles south and 3 miles east Olney, Mississippi 4,844-59 ft.; IP 476 bbl.

UNNAMED—Young, August, NuEnamel 1 Donnell, Section 850, TE&L Survey, 1½ mile north and 1 mile west Eliasville, Strawn 1,766-80 ft.; IP 24 bbl.

UNNAMED—Young, November; L. T. Burns 1 C. Ellis, Section 207, TE&L Survey, 4½ miles southeast Olney, limestone 4,849-65 ft.; IP 100 bbl.

UNNAMED—Wilbarger, November; National Associated and The Texas Co. 1 J. D. Crouch, Section 24, Block 16, H&TC Survey, 2 miles north Tolbert, limestone 5,031-39 ft.; IP 174 bbl.

UNNAMED—Runnels, November; W. R. Ransome 1-A John W. Harris, Block 1, J. V. Cabrera Survey 514, ½ mile west Crews, Palo Pinto 3,902-14 ft.; IP 59 bbl.

UNNAMED—Archer, December; Staley Oil Co. 2 Vieda Powell, J. M. Armstrong Survey, 2½ miles southeast Archer City, sand 935-939 ft.; IP 10 bbl.

UNNAMED—Montague, December; Eason Oil Co. 1 Temple Yarbrough, F. J. Bellows Survey, 4 miles north St. Jo, sand 4,074-94 ft.; IP 82 bbl.

UNNAMED—Wilbarger, December; Paradise Oil Co. 1 W. T. Waggoner estate, Section 11, Block 14, H&TC Survey, 4 miles southwest Harrold, conglomerate 3,138-55 ft.; IP 60 bbl.

NEW PAYS

ALMON—Cooke, August; Fred Smuggs et al 7 Almon-Sun, J. Randolph Survey, Strawn 3,934-42 ft., IP 120 bbl.

BURNS-BENSON — Archer, May; H. W. Snowden 1 Morrison, Section 1,823, TE&L Survey, Caddo 4,495-4,520 ft., IP 206 bbl.

GARVEY—Young, July; R. S. LeSage 2 C. K. Garvey, Section 1, A. B. Jamison Survey, Strawn 3,640-48 ft., IP 12 bbl.

HANBY—Grayson, September; The Texas Co. 3 Hanby, Samuel Stewart Survey, Trinity 398-402 ft., IP 469,000 cu. ft. gas.

HEARD — Clay, March; L. T. Burns 1 Ford, Section 3,221, TE&L Survey, Caddo 5,750-60 ft., IP 565 bbl.

LOGAN—Young, January; Hanlon-Buchanan, Inc. et al 1 Logan, Section 3, J. Poitevent Survey, Caddo 4,019-14 ft., IP 81 bbl.

MADDEN — Wichita, September; W. H. Hammon et al 1 Parker, Section 26, Palo Pinto CSL Ellenburger 5,248-68 ft., IP 126 bbl.

NATIONAL — Wilbarger, April; National Associated 1 Smith, Section 30, H&TC Survey, Rock Crossing 3,514-27 ft., IP 242 bbl.

NATIONAL—Wilbarger, January; National Association 4-A Sun-Kelly account, Section 30, H&TC Survey, Caddo 4,455-78 ft., IP 160 bbl.

SIVELLS BEND—Cooke, February; Standard Oil Co. of Texas 2 Beasley, John McKerley Survey, Ellenburger 8,905-40 ft., IP 171 bbl.

WILSON—Cooke, January; James L. Anderson 1 C. T. Mooney, A. C. C. Bailey Survey, Strawn 3,933-43 ft., IP 211 bbl.

EXTENSIONS

ASYLUM—Wichita, October; Consolidated Oil Co. 1 J. T. Harrell, Denton County School Land Survey, lime pay 4,427-37 ft., IP 10 bbl.

BELCHERVILLE—Montague, January; S. D. Johnson 1 Crenshaw, W. Wallace Survey, Bend 5,550-65 ft., IP 72 bbl.

CLARA-TEXHOMA—Wichita, September; Akin & Dimsch 1-A Hardin, O. Farrish Survey, pay 1,407 ft., IP 12 bbl.

KNOX — Young, August; Hassie Hunt Trust 1 Harrison, Filepe Jaime Survey, Strawn 2,692-99 ft., IP 20 bbl.

KNOX—Young, February; Lesco, Inc., 1

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S. R. Jeffery, D. Brown Survey, Caddo 3,904-24 ft., IP 146 bbl.

PARROTT—Throckmorton, August; Fred M. Manning 1 O. H. Parrott, Section 962, TE&L Survey, Caddo 3,918-23 ft., IP 110 bbl.

PARROTT — Throckmorton, November; Fred Manning 1 M. K. Graha Estate, Section 985, TE&L Survey, Caddo 3,837-42 ft., IP 142 bbl.

WOODSON — Throckmorton, September; Fred Manning 1 M. K. Graham Estate, Sec-985, TE&L Survey, Caddo 3,834-50 ft., IP 113 bbl.

WEST CENTRAL TEXAS

INGRAM—Taylor, February; West Central Drilling Co. 1 Ingram, Subdivision 18, Prices CSL Survey, 3½ miles southeast Merkel, Hope 2,740-41 ft., IP 54 bbl.

MURPHREE—Taylor, May; West Central Drilling Co. 1 C. H. Murphree, Section 9, SP Survey, 5 miles south Merkel and 3 miles southeast Blair, Cook 2,622-29 ft., IP 124 bbl.

O'CONNOR—Stephens, May; Fred Manning, Inc. 1 C. J. O'Connor, Section 52, T&P Survey, 8 miles south Eolian, Caddo 3,384-98 ft., IP 528 bbl.

SANDERS — Shackelford, March; Allied Oil Co. 1 L. A. Sanders, Section 583, TE&L Survey, 3 miles northeast Albany, Ellenburger 4,538-39 ft., IP 443 bbl.

TEMPLETON — Coleman, March; Hughes Drilling Co. et al 1 Templeton, Section 8, HT&B Survey, 1 mile northwest Silver Valley, Gray 3,457-87 ft., IP 1,680 bbl.

UNNAMED — Taylor, September; West Central Drilling Co. et al 1 Kincaid, Section 27, T&D Survey, 1¾ miles northeast Tye, King 2,613-21 ft., IP 138 bbl.

UNNAMED—Shackelford, August; Roeser & Pendleton, Inc. 1 T. W. Lee, Section 27, T&P Survey, 2 miles southwest Albany, Caddo 4,455-78 ft., IP 7 bbl.

UNNAMED—Shackelford, March; Hedrick Oil Co. 1 Dawson & Conway, ETRR Survey 195, 5 miles northeast Leuders, Saddle Creek 1,561-68 ft., IP 21 bbl.

UNNAMED—Palo Pinto, July; Palo Pinto Oil & Gas Co. 1 Roberson, Section 53, T&P Survey, 9 miles northeast Strawn, Marble Falls 3,877-86 ft., IP 30 bbl.

UNNAMED—Palo Pinto, March; Ashland Oil Refining Co. 1-A Lee, Section 1,744, TE&L Survey, 3 miles northwest Graford, Ellenburger 5,040-50 ft., IP 73 bbl.

UNNAMED—Nolan, July; Sohio Oil Co. 1 Faver, Section 50, T&P Survey, 6 miles southeast Sweetwater, Strawn 5,671-82 ft., IP 10 bbl.

UNNAMED—Jones, September; M. E. Hart 1 Morrison estate, D. T. Bruce Survey 135, 4½ miles southwest Hodges, Flippen 2,172-83 ft., IP 91 bbl.

UNNAMED—Jones, August; V. E. Autry 1 W. A. Miller, Section 39, SP Survey, 14 miles southwest Anson, Swastika 3,436-43 ft., IP 292 bbl.

UNNAMED—Eastland, June; G. D. Sandifer, Jr., 2 G. P. Brawner, Section 25, ET Ry. Survey, 2 miles northwest Rising Star, Strawn 1,058-61 ft., IP 28 bbl.

UNNAMED—Coleman, June; H. T. Owens and Rhodes Drilling Co. 1 Gorman, Section 31, T&NO Survey, 3 miles southwest Novice, Gardner 3,714-22 ft., IP 2,500,000 cu. ft. gas.

UNNAMED—Coleman, September; Coleman Oil & Gas Co. 1 Moore, Wharton CSL 496, 4 miles southeast Santa Anna, Fry 1,464-75 ft., IP 77 bbl.

UNNAMED—Eastland, November; Cities Service Oil Co. 1-B W. T. Hittson, Section 2, SPRR Survey, 4½ miles northeast Cisco, Lake Sand 3,343-58 ft., IP 84 bbl.

UNNAMED—Runnels, November; W. R. Ransome 1-A John W. Harris, Block 1, J. V. Cabrera Survey, ½ mile west Crews, Palo Pinto 3,902-14 ft., IP 59 bbl.

NEW PAYS

COOPER-ROBERTS—Jones, March; S. B. Roberts 7 Cooper, Section 29, T&P Survey, 4½ miles northeast Hawley, Swastika 2,186-90 ft., IP 231 bbl.

COOPER-ROBERTS—Jones, March; S. B. Roberts 6 Cooper, Section 29, T&P Survey, Gunsight 2,317-30 ft., IP 237 bbl.

MURPHREE—Taylor, August; West Central Drilling Co. 2 Murphree, Block 9, SP Survey 1, Upper Hope 2,875 ft., IP 306 bbl.

SEDGWICK—Shackelford, March; Phillips Petroleum Co. 1 Pan-Ace, Section 16, Asylum Land, Ellenburger 4,211-20 ft., IP 1,420 bbl.

SEDGWICK—Shackelford, July; Phillips Petroleum Co. 1 Hickman-Neller, Section 16, LAL Survey, Marble Falls 3,934-44 ft.; IP 29 bbl.

EXTENSIONS

BLUFF CREEK — Shackelford, August; Nickock & Reynolds 1-C Morris, Section 198, ET Ry. Survey, Bluff Creek 1,569-74 ft., IP 41 bbl.

CROSSCUTT—Brown, October; Keeiner & Heltzel 1 Fomby, J. Beck Survey, Ellenburger 3,136-51 ft., IP 38 bbl.

NUGENT—Jones, September; H. W. Elliott 1 Roberts, J. Gasner 8 Survey, Bluff Creek 1,652 ft., IP 16 bbl.

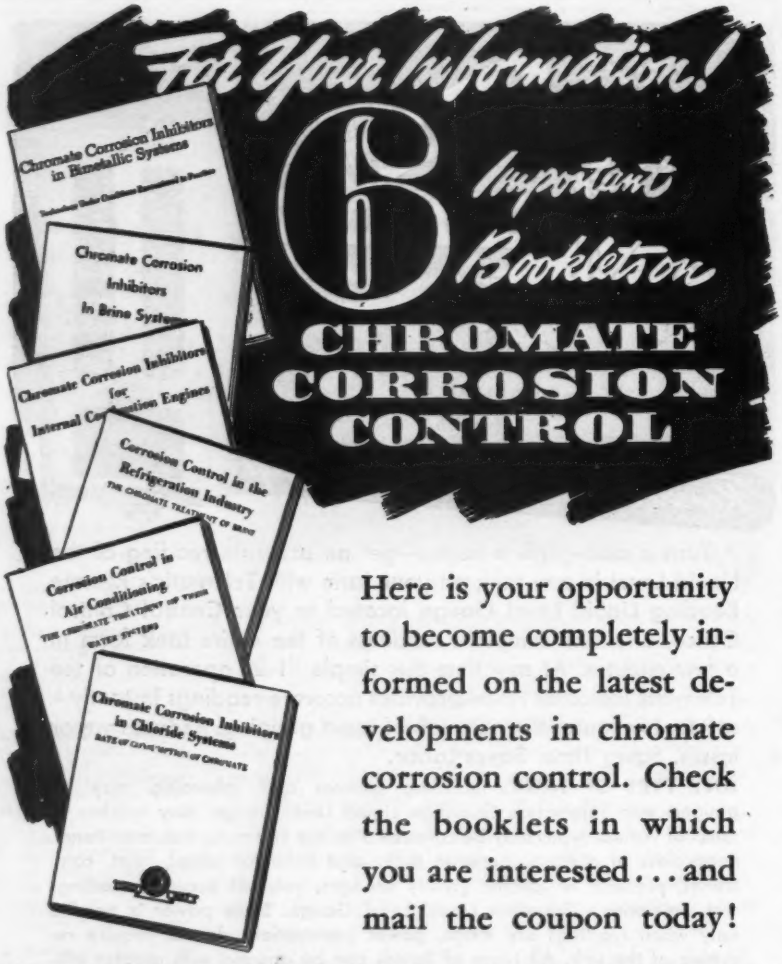
NUGENT—Jones, August; Roark, Hooker & Roark 1 F. C. Hodges, A. Bell Survey, Gunsight 1,940-43 ft., IP 25 bbl.

ALBANY AREA—Shackelford, November; Roeser & Pendleton, Inc. 1-B-90 W. I. Cook Estate, Section 90 ETRR Survey, 8 miles northwest Albany, sand 1,315-28 ft., IP 90 bbl.

UPPER GULF COAST TEXAS

EAST BLESSING—Matagorda, August; Amerada Petroleum Corp. et al 1 Ike Laughlin; Jno. Holmes Sur., 3 miles southeast of Blessing; IP 132 bbl., Frio, perforations 8,832-46 ft.

GLENDALE—Trinity, March; Magnolia Petroleum Co. 2 Bolton, 3 miles west of Glendale, Henry Bond League, Abstract 75;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IP 24 bbl. condensate and 500,000 cu. ft. gas, Edwards lime, perforations 10,500-540 ft.

HUTCHINS—Wharton, July; Lake View Oil Co. 1 J. E. J. Johnston, 1 mile south of Lakeview gas field, I&GN Sur., Sec. 22; IP 126 bbl., Oligocene, perforations 4,514-46 ft.

LIVERPOOL — Brazoria; Pan American Production Co. 1 Callihan Unit, 1½ miles southeast of Liverpool, Angier-Hall-Bradley Sur.; IP 331 bbl., Frio, perforations 8,757-62 ft.

McCOY—Liberty, March; Ohio Oil Co. 1 Kirby Lumber Co., 6 miles east of Cleveland, James McCoy League; IP 51 bbl. condensate and 1,167,000 cu. ft. gas, Wilcox, perforations 9,106-27 ft.

MIDFIELDS—Matagorda, February; Sun Oil Co. 2 Strnadel, 18 miles southwest of Bay City, I&GN Sur. 7; IP 229 bbl., Frio, perforations 9,134-46 ft.

NORTH PORT NECHES—Orange, October; Hinkle Drilling Co. 1 G. M. Adcock, 8,100 ft. northwest of Port Neches field production, Jno. Stephenson Sur.; IP 300 bbl., Hackberry, perforations 8,774-78 ft.

NORTHWEST HAMSHIRE—Jefferson, March; McCarthy Oil & Gas Corp. 3 Tyrrell Trust, Sec. 82, 4.3 miles northwest of Hamshire, W. C. Dunshie Sur.; IP 217 bbl., Hackberry, perforations 10,161-69 ft.

SOUTH MAYES—Chambers, March; Humble Oil & Refining Co. 1 Lula Wallis et al, 6,500 ft. southeast of production, Samuel Mather Sur.; IP 185 bbl., Frio, perforations 9,194-9,200 ft.

TIDEHAVEN—Matagorda, August; Magnolia Petroleum Co. 1 Live Oak Farms, 1 mile west of El Maton and 3 miles northeast of Blessing townsite, J. W. E. Wallace Sur.; IP 160 bbl., Frio, perforations 8,450-56 ft.

UNNAMED—San Jacinto, March; Fred M. Manning, Inc., 1 Central Coke & Coal Co., J. Ferguson Sur., 2½ miles southwest of Mercy field; IP 14 bbl., condensate and 285,000 cu. ft. gas, Wilcox, perforations 8,310-45 ft.

UNNAMED—Madison, October; West Production Co. and Noranda Oil Co. 1 H. M. Boring, approximately 7½ miles southwest of Madisonville townsite, Amy Boatright Sur.; IP 39 bbl. condensate and 1,053,000 cu. ft. gas, Edwards lime, perforations 9,615-30 ft.

UNNAMED—Jackson, June; Hewitt & Dougherty 1 A. A. Johnson, 10 miles north of Edna, in Wm. Whitaker Sur.; IP 2,500,000 cu. ft. gas, shutin, perforations 4,150-60 ft.

UNNAMED—Chambers, November; Standard Oil Co. of Texas 1 State-Galveston Bay, Lease 27,129, in Galveston Bay, Section 201, 1 mile northeast of Red Fish Reef production, IP 288 bbl. through perforations at 8,752-66 ft.

UNNAMED—Wharton, December; Floyd L. Karsten 1 J. L. Reitz, ETRR Survey, 1 mile northwest of South El Campo field and 1¾ miles northeast of Daboval field, IP 3,579,000 cu. ft. gas through perforations at 6,936-42 ft.

NEW PAYS

ALDINE—Harris, April; F. M. Corzelius 1 O. P. Hairgrove, E. Farias Sur.; IP 3,683,000 cu. ft. gas, shutin, Yegua, perforations 7,528-40 ft.

ALTAIR—Colorado, November; Superior Oil Co. 4-A Mrs. Myra S. Pryer, in BBB&C Survey, Abstract 710, IP 117 bbl. condensate and 4,600,000 cu. ft. gas, through perforations at 10,174-192 ft.

BLESSING—Matagorda, April; American Liberty Oil Co. 1 Dela Braden Unit 1, Lot 36, OWWO; IP 200 bbl. condensate and 7,000,000 cu. ft. gas, Frio, perforations 8,425-67 ft.

BLUE LAKE—Brazoria, April; McCarthy Oil & Gas Corp. 2 Frank K. Stevens et al, Geo. Robinson League; dual completion, IP Frio "T" sand (new sand), perforations 9,028-40 ft., 4,510,000 cu. ft. gas; IP Frio "C" sand, perforations 8,915-23 ft., 3,096,000 cu. ft. gas.

BLUE LAKE—Brazoria, April; McCarthy Oil & Gas Corp. 1 Turnbull et al, Geo. Robinson League; IP 233 bbl., Frio, perforations 8,516-22 ft.

BLUE LAKE—Brazoria, August; McCarthy Oil & Gas Corp. 1 Holland et al, John Bradley Sur.; IP 55 bbl. condensate, Frio, perforations 10,980-11,014 ft.

CAPLAN—Galveston, September; Roxoil Drilling, Inc., (Johnny Mitchell et al) 1 R. P. Smith Unit 1, Minor Knowlton Sur.; IP 61 bbl., Miocene, perforations 4,031-35 ft.

CEDAR POINT—Chambers, June; Standard Oil Co. of Texas 3-M State-Galveston Bay, Sec. 118; IP 116 bbl., Miocene, perforations 3,660-65 ft.

CEDAR POINT — Chambers, August; Standard Oil Co. of Texas and Salt Dome Oil Corp. 33-M State-Galveston Bay, Galveston Bay, Sec. 118, twin to 23-M-118; IP 121 bbl., Miocene, perforations 3,867-76 ft.

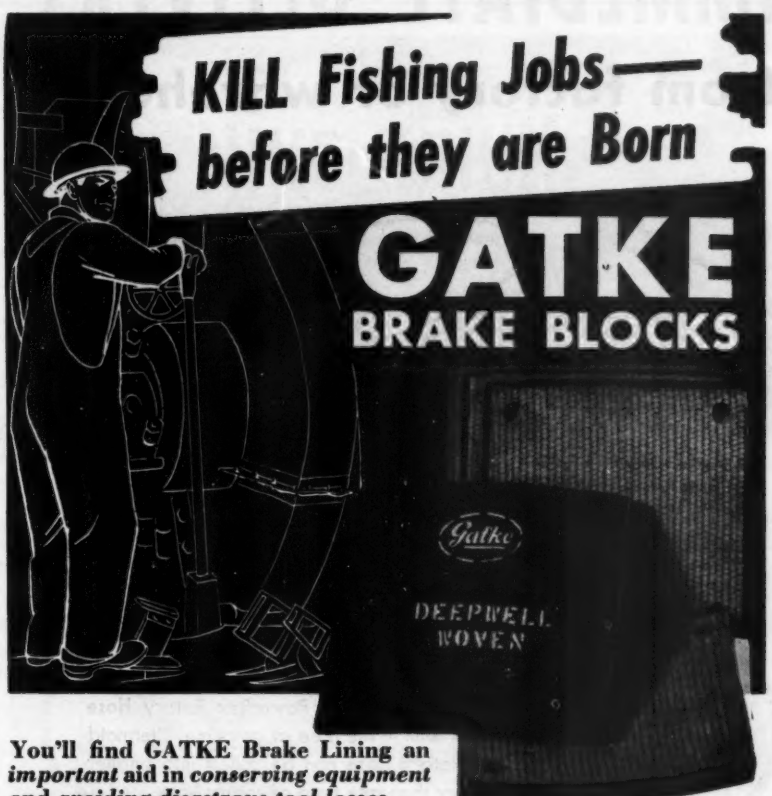
DABOVAL — Wharton, April; Floyd L. Karsten 1 Gus Lillie, ETRR Co. Sur. 73, Abstract 130; dual completion, IP Frio "C" sand, 1,740,000 cu. ft. gas, perforations 7,230-34 ft., IP Frio "T" sand, 53 bbl. condensate, perforations 7,140-44 ft.

DOUBLE BAYOU—Chambers, September; Humble Oil & Refining Co. 2-A Double Bayou Unit 2, in R. O. W. McManus Sur.; IP 240,000 cu. ft. gas and 77 bbl. condensate, Frio, perforations 9,000-07 ft.

HULL—Liberty, October; American Republics Corp. 175 Dolbear, east flank of field, J. Devore League; IP 128 bbl., Middle Yegua, perforations 4,876-80 ft.

HULL—Liberty, December; American Republics Corp. 176 Dolbear, in J. Devore League, IP 138 bbl. from Middle Yegua perforations at 5,085-90 ft.

LANE CITY—Wharton, April; H. W. Snowden 5-A H. C. Cockburn, S. Castleman Sur.; IP 81 bbl., Marginulina, perforations 5,345-53 ft.



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LANE CITY—Wharton, June; General Crude Oil Co. 8 Security Bank & Trust Co., S. Castleman Sur.; IP dry gas, shut in, perforations 4,154-56 ft.

LOVELL LAKE—Jefferson, August; Humble Oil & Refining Co. 40 Jefferson Land Co. C. Hillebrandt Sur.; IP 8,290,000 cu. ft. gas and 137 bbl. condensate, Frio, perforations 9,030-40 ft.

McCOY—Liberty, May; Ohio Oil Co. 2-A B. E. Quinn, Daniel Donahoe League; IP 61 bbl., Wilcox (Quinn), perforations 9,125-31 ft.

MIDFIELDS—Matagorda, April; Sun Oil Co. 1 R. B. Trull, I&GN Sur., Block 6; IP 3,819,000 cu. ft. gas and 308 bbl. condensate, Frio, perforations 9,088-97 ft.

NEEDVILLE—Fort Bend, March; W. L. Goldston 5 E. C. Farmer, Robert Hodge Sur., Abstract 33; IP 146 bbl., Frio, perforations 6,675-78 ft.

NORTHWEST HAMSHIRE — Jefferson, September; McCarthy Oil & Gas Corp. 4 W. C. Tyrrell Trust, W. D. Dunshie Sur.; IP 4,600,000 cu. ft. gas and ungaged amount of condensate, Hackberry, perforations 10,238-52 ft.

SARATOGA—Hardin, April; L. M. Josey et al 2 Caswell Trust Co., BBB&C Sur., Abstract 58; IP 128 bbl., Yegua, perforations 5,854-66 ft.

SOUR LAKE—Hardin, August; The Texas Co. 326 Texas Co. fee, Stephen Jackson League; IP 243 bbl., Yegua, perforations 5,200-10 ft.

SOUTH LIBERTY—Liberty, March, F. J. Bashara 2 H. L. McGuire in M. G. White Sur.; IP 198 bbl., Upper Frio, perforations 3,299-3,309 ft.

SOUTH LIBERTY—Liberty, May; Sun Oil Co. 12 Shade fee, David Minchey League; IP 103 bbl., Cook Mountain, perforations 4,585-4,615 ft.

STRATTON RIDGE—Brazoria, June; E. Cockrell 5 Seaburn Estate Heirs, Jared E. Groce 5 League Grant; IP 147 bbl., perforations 4,576-81 ft.

SUGAR VALLEY—Matagorda, February; Superior Oil Co. of California 1 W. J. Culbertson, Burnett & Sojourner Sur., Abstract 13, 4 miles northeast of Van Vleck; IP 256 bbl. condensate and 2,590,000 cu. ft. gas, Frio, perforations 8,274-76 ft.

SUGAR VALLEY—Matagorda, March; Superior Oil Co. of California and Jno. H. Blaffer 1 Sadie E. Thomasson, P. Burnett and A. S. Sojourner Sur.; dual completion, IP Frio "T" sand, 422 bbl., perforations 9,083-86 ft., and IP Frio "C" sand, 3,720,000 cu. ft. gas and 71 bbl. condensate, perforations 8,762-72 ft.

SUGAR VALLEY—Matagorda, April; Skelly Oil Co. 1 Gregg Lawrence, Burnett & Sojourner Sur.; IP 168 bbl., Frio, perforations 8,993-95 ft.

SUGAR VALLEY—Matagorda, May; Skelly Oil Co. 1 B. N. Cocke, in Burnett & Sojourner Sur.; IP 1,110,000 cu. ft. gas and 8 bbl. condensate, Frio, perforations 7,674-78 ft.

SUGAR VALLEY—Matagorda, June; Skelly Oil Co. 1 C. C. Talcott, Burnett & Sojourner Sur.; IP 128 bbl., Frio, perforations 8,855-63 ft.

TIDEHAVEN — Matagorda, September; Ralph A. Johnston 1 Live Oak Farms, Josiah Tilley League, 2 miles northeast of Blessing; IP 184 bbl. condensate and 3,681,000 cu. ft. gas, Frio, perforations 8,756-72 ft.

TOMBALL—Harris, March; Humble Oil & Refining Co. 10 Edward F. Milo et al, C. N. Pillot Sur.; IP 38 bbl. condensate, Cockfield, perforations 6,146-59 ft.

WEST COLUMBIA—Brazoria, September; Hogg Oil Co. 10-A Mike Hogg et al, Martin Varner Sur.; IP 470 bbl., Frio, perforations 6,106-22 ft.

WEST SILSBEE—Hardin, April; American Republics Corp. 1 Ellery fee, Ellery League; IP 84 bbl., Yegua, perforations 7,706-10 ft.

LOWER GULF COAST TEXAS

BEASLEY—San Patricio, August; Southern Minerals Corp. 1 John R. and Floy L. Beasley, approximately 1½ miles southwest of Tynan, near Bee County line, V. Juarez

Sur.; IP 10 bbl. condensate, perforations 4,900-08 ft.

BISHOP—Nueces, August; H. R. Smith and W. C. McBride, Inc., 1 E. G. Whitten, (OWDD), 2 miles northwest of Bishop and 3 miles east of Stratton field, Sec. 153 of F. Z. Bishop Subdivision of Weil Ranch, old Southern Minerals dry hole; IP estimated 30,000,000 cu. ft. gas, no gage on condensate, perforations 7,030-46 ft.

CAGE—Brooks, May; Shell Oil Co., Inc., 1 Cage Ranch, Jesus Guzman Sur., 3½ miles northwest of Barrosa; IP 4,500,000 cu. ft. gas with 80 bbl. condensate, perforations 8,022-36 ft.

CLAY WEST—Live Oak, September; Continental Oil Co. 2 Mrs. Clay West Burns, 9 miles southwest of Geo. West, Wesley Sellman Sur.; IP 33 bbl. condensate, Wilcox, perforations 10,121-32 ft.

COSDEN-WILCOX—Bee, October; Mackhank Petroleum Co. 1 W. D. Walton et al, ⅝ mile southwest of 1 Freeland gas-condensate discovery, John Pace Sur.; IP 117 bbl., perforations 7,066-72 ft.

EAST FALFURRIAS—Jim Wells, May; Shell Oil Co., Inc., 1 William Van Hoogenduyze, 4½ miles southeast of LaGloria and 2 miles east of Wilson field, De La Garza Grant; IP 7,750,000 cu. ft gas and 108 bbl. condensate, perforations 9,023-38 ft., and 9,060-69 ft.

EAST TAFT—San Patricio, September; Claud B. Hamill 1 Ruth P. Sweatt et vir, Lot 4, Sec. 7, Second Subdivision of Taft Farm Lands, 2 miles southeast of Taft field; IP 34 bbl., perforations 5,602-07 ft.

GYP HILL—Brooks, May; Sun Oil Co. 4-B Mary M. Lasater, GB&CNG Sur. 331, 6½ miles southeast of Falfurrias; IP 41 bbl. Lower Frio, perforations 4,070-75 ft.

LAGARTO—Live Oak, December; Roxie Wright et al 1 S. F. Beall Estate, in W. J. Cannon Survey, 3½ miles northeast of Hinnant field, ½ mile northwest of Lagarto, IP 50 bbl. through perforations at 5,580-85 ft.

LANDA—Hidalgo, December; Stanolind Oil & Gas Co. 1 Harry Landa, in Juan Jose Trevino Porcion, Abstract 221, 6 miles southwest of Donna, IP 69 bbl. condensate and 3,005,000 cu. ft. gas through perforations at 8,390-96 ft.

NORTH MINNIE BOCK—Nueces, February; Atlantic Refining Co. 1 James H. Ewing, M. Lopez de Herrera Grant, Sec. 46; IP 19,000,000 cu. ft. gas, Frio, perforations 8,254-68 ft.

OAKVILLE-WILCOX—Live Oak, August; Stanolind Oil & Gas Co. 1 L. A. Reagan, ¾ mile southwest of gas-condensate discovery well, Jas. McGloin Sur.; IP 30 bbl., Wilcox, open hole 6,733-38½ ft., no shots, top Wilcox pay 6,717 ft.

PASO REAL—Willacy, November; Magnolia Petroleum Co. 2 F. Armendaiz, in San Juan de Carricitos Grant, 9 miles northeast of San Dominio, 6½ miles southeast of Willamar field, IP 13,000,000 cu. ft. gas, through perforations at 8,585-600 ft.

POEHLER—Goliad, March; Jay Simmons 1 Mary Poehler, Jacob Fifer Sur., 6,000 ft. northeast of South Cabeza field; IP 234 bbl., Wilcox, perforations 8,319-23 ft.

ROUND LAKE—San Patricio, December; Hewitt & Dougherty and Lonnie Glasscock 1 W. A. Jennings, in John McMullen Survey, 2 miles northwest of San Patricio townsite, 1¼ miles southeast of Gallagher field of Jim Wells County, IP 32 bbl. through perforations 5,442-56 ft.

SCHWARTZ—Live Oak, December; Henshaw Bros. and E. H. Smith 1 H. N. Schwartz et al, in John McMullen Survey, 6 miles west of Mathis, 2 miles northeast of Lucas gas field, IP 46 bbl. through perforations at 4,016-19 ft.

SLIVA—Bee, May; Bridwell Oil Co. 1 Sliva Estate, F. O. Skidmore Sur. 4, 9 miles southwest of Beeville, 4½ miles southwest of Yougeen field, gas production; IP 10 bbl., Stillwell sand, perforations 4,377-88 ft.

STRAUCH-WILCOX—Bee, March; Mills Bennett 1 Martha Berger et al, 2 miles southwest of Tuleta, in J. M. Uranga Grant; IP 192 bbl. condensate and 6,000,000 cu. ft. gas, Luling, perforations 8,082-8,140 ft.

WELDER RANCH — Victoria, March; Sterling Oil & Refining Co. 2 J. J. Welder, 7½ miles east of Nursery, S. A. Belding Sur.; IP 40 bbl. condensate and 1,700,000 cu. ft. gas, Frio, perforations 5,690-5,710 ft.

WEST MAGNOLIA CITY—Jim Wells, May; Ralph E. Fair, Inc., et al, 1 Reynolds & Richardson, 1 mile northwest of Magnolia City field, 6 miles southeast of Alice, W. N. Staples Sur. 210; IP 76 bbl., Frio, perforations 5,402-14 ft.

UNNAMED—Willacy, May; Magnolia and Abercrombie 1 C. E. Todd, 5 miles west of Raymondville, San Juan de Carricitos Grant; IP 40 bbl. condensate and estimated 4,000,000 cu. ft. gas, perforations 7,540-60 ft.

UNNAMED—Goliad, September; Sun Oil Co. 1 M. L. Patton, 6 miles west of Goliad, Maria Jesusa de Leon Grant; IP 34 bbl., perforations 10,670-77 ft.

UNNAMED—Refugio, October; Barnsdall Oil Co. 1 Mrs. E. T. Morrow, 1 mile south of McFadden area gas production, Edward Perry Sur.; IP gas, no gage, shutin, perforations 2,251-62 ft.

UNNAMED—Kleberg, November; Sun Oil Co. 4 E. G. Canales, in CCSD&RGNG Survey 339, 1⅝ miles southeast of Tijerina-Canales field, IP 130 bbl. condensate and 5,840,000 cu. ft. gas through perforations at 10,225-251 ft.

UNNAMED — Nueces, November; Jack Little, Trustee, 1 Mrs. E. V. Rieber, in J. J. de la Garza Montemayor & Sons "Casa Blanca" Grant, approximately 1 mile north of Richard King field, IP 9,040,000 cu. ft. gas through perforations at 5,150-55 ft.

UNNAMED—Refugio, December; Wil-Tex Oil Corp. and Herman E. Brown 1 Jamie Hynes, in M. Arocha Survey, 3 miles northwest of Refugio, IP 18,000,000 cu. ft. gas

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NEW PAYS

CABEZA CREEK—Goliad, December; Continental Oil Co. 11 J. E. Pettus et al, in Sebastiano Vela Survey, IP 191 bbl. from Pettus sand perforations at 4,528-33 ft.

DAN SULLIVAN—Brooks, October; Sun Oil Co. 6 D. J. Sullivan, El Tule Grant; IP 102 bbl. condensate and 7,560,000 cu. ft. gas, perforations 10,275-93 ft. and 10,155-80 ft.

FALLS CITY—Karnes, March; Southern Minerals Corp. 4 L. A. Faires, Louis Manchaca Grant; IP 20 bbl., Government Wells, perforations 4,887-95 ft.

LOS INDIOS—Hidalgo, February; Baldridge & King 2 W. L. Goldston, Santa Anita Grant, 5 miles northwest of Linn; IP 2,900,000 cu. ft. gas and estimated 75 bbl. condensate, Frio, perforations 6,030-58 ft.

MIDWAY—San Patricio, September; F. M. Boykin, Jr. et al 1 H. H. Hutto, NW NW Sec. 81, Geo. H. Paul's Subdivision of Coleman-Fulton Pasture Co. lands; IP 170 bbl., Hutto sand (Frio), perforations 5,128-30 ft.

MIDWAY—San Patricio, November; F. M. Boykin, Jr. 3 H. H. Hutto, Section 81, George H. Paul's Subdivision of Coleman-Fulton Pasture Lands, IP 154 bbl. through perforations at 5,680-86 ft.

NORTH MINNIE BOCK—Nueces, March; Atlantic Refining Co. 2 James H. Ewing, 3 miles southwest of Robstown, M. Lopez de Herrera Grant; IP 188 bbl., Frio, perforations 6,229-35 ft.

NORTH MINNIE BOCK—Nueces, August; Louis Crouch 2 Walter L. Parr, Geo. H. Paul's Subdivision of Driscoll Ranch; IP 107 bbl., perforations 5,994-6,004 ft.

SARCO CREEK—Goliad, February; Ginther, Warren & Ginther 3 Carrie G. Wood et al, Geo. Villa Sur., Abstract 49, 9 miles southeast of Goliad; dual completion; IP (new pay) 5,570,000 cu. ft. gas, Frio, perforations 4,148-58 ft., IP 1,555,000 cu. ft. gas, Vicksburg, perforations 5,032-42 ft.

SAXET—Nueces, February; Richardson Petroleum Co. 1 L. G. Talbert, Russell Farm Tracts; IP 164 bbl., Frio, perforations 6,643-45 ft.

SLIVA—Bee, June; Bridwell Oil Co. 1 Jake Huble Estate, Brooks & Burleson Sur.; IP 400,000 cu. ft. gas and 8 bbl. condensate, Frio, perforations 3,422-28 ft.

STRAUCH-WILCOX—Bee, October; Mills Bennett 1 C. G. Rico, J. M. Uranga Grant; IP 11,000,000 cu. ft. gas with spray of condensate, Slick, perforations 8,000-15 ft.

WEST MAGNOLIA CITY—Jim Wells, July; Ralph E. Fair, Inc., 1 Wm. F. Filter, Block 7, Chas. Seefeld Farm lands, W. N. Staples Sur.; IP 2,221,000 cu. ft. gas, perforations 3,752-53 ft.

WEST SINTON—San Patricio, November; Jones & Morgan 1 W. Ford, Block 29, J. J. Welder Subdivision, John Pollan Survey, IP 151 bbl. through perforations at 3,460-68 ft.

WILLAMAR—Willacy, January; Pan American Production Co. 3 G. C. Kent, San Juan de Carricitos Grant, Share 13; dual completion, IP 80 bbl., perforations 7,902-65 ft., and IP 79 bbl. (new sand), Eocene, perforations 5,286-88 ft.

YOAKUM—De Witt, March; Pure Oil Co. 1 A. F. Karl, John May Sur., Abstract 329; IP 38 bbl., Wilcox, perforations 8,663-65 ft.

EXTENSIONS

SLIVA—Bee, May; Bridwell Oil Co. 1 J. W. Baird, J. G. Rountree Sur. 8, 9 miles southeast of Beeville, 1 mile west of discovery well; IP 997,500 cu. ft. gas and 18 bbl condensate, Stillwell sand, perforations 4,392-95 ft.

SOUTH LOUISIANA

ALLIANCE AREA—Plaquemines, November; The California Co. 4 E. P. Brady, Unit 4, approximately 3 miles southeast of Bayou de Fleur field, 19-16s-24e, IP 60 bbl. condensate and 3,660,000 cu. ft. gas through perforations at 9,072-82 ft.

BAYOU LA FLEUR—Jefferson, March; The California Co. 1 E. P. Brady et al, 66-16s-24e; IP 300 bbl.; perforations 9,363-70 ft., in Miocene.

BIG POINT AREA—St. Tammany, October; Atlantic Refining Co. 1-A State-Lake Pontchartrain Lease 318, Lake Pontchartrain-9s-12e; IP 166 bbl. condensate and 6,255,000 cu. ft. gas, Miocene, perforations 7,180-88 ft.

BILBO—Beauregard, July; Magnolia Petroleum Co. 1 Powell Lumer Co., 2 miles northwest of North Oretta field, 17-6s-11w; IP 85 bbl., Cockfield, perforations 8,412-18 ft. Note: This well recompleted in August for IP 51 bbl.

BON AIR—Jefferson Davis, January; Sohio Petroleum Co. 1 Claudius Fontenot et al, C NE SW 15-10s-6w; IP 238 bbl., Marginulina, perforations 9,694-9,703 ft. This field also known as Iowa Junction.

CHOUPIQUE—Calcasieu, October; Union Sulphur Co., Inc., 1 Eugene Ellender et al, 5 miles north of West Hackberry field, 17-11s-10w; IP 93 bbl., Miocene, perforations 8,825-31 ft.

COLLEGE POINT AREA—St. James, March; Humble Oil & Refining Co. 1 Society of Catholic Religious Education and Literature, 25-12s-4e; IP 129 bbl., Oligocene, perforations 10,705-42 ft.

QUEEN BESS ISLAND (East Barataria Bay)—Jefferson, January; The Texas Co. 1 State-Barataria Bay, in the bay-20s-25e; IP estimated 95 bbl. condensate and 1,808,000 cu. ft. gas, Miocene, perforations 11,397-407 ft.

HAHNVILLE PROSPECT—St. Charles, March; Union Oil Co. of California 1 Milliken & Farwell, 26-12s-20e; IP 25 bbl., Miocene, perforations 8,770-86 ft.

NEW IBERIA—Iberia, January; Humble Oil & Refining Co. 1 Mayo Romero, 2-12s-7e; IP 5 bbl. condensate and 1,070,000 cu. ft. gas, Miocene, perforations 11,010-15 ft.

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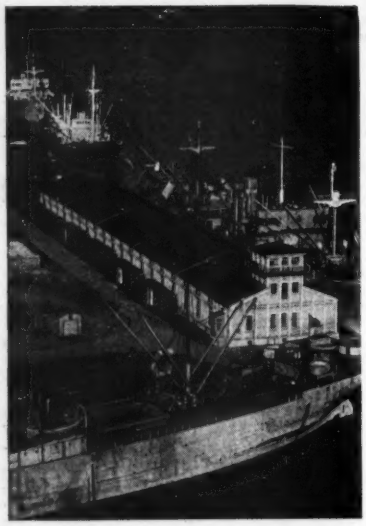

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April; Continental Oil Co. 1 Cameron Parish School Board, 16-15s-14w; IP 5 bbl. condensate and 1,840,000 cu. ft. gas, Miocene, perforations 7,312-16 ft.

LITTLE TEMPLE — LaFourche, April; Humble Oil & Refining Co. 1 Louisiana Delta Farms Co., 19-17s-23e; IP 69 bbl. fluid, 17 bbl. oil, remainder water, Miocene, perforations 10,622-626 ft.

LONGVILLE (SEALE)—Beauregard, December; Barnsdall Oil Co. 1 Long Bell Lumber Co., NW SW NE 1-6s-10w, 4 miles north of Gordon field, IP 293 bbl. from Cockfield perforations at 8,236-53 ft.

MAMOU—Evangeline, January; Magnolia Petroleum Co. 1 J. B. Morein, C NW SW 5-5s-1e; 1½ miles northeast of Mamou; IP 208 bbl., Wilcox, perforations 11,510-553 ft.

NORTH ORETTA—Beauregard, February; Magnolia Petroleum Co. 1 M. J. Witzki, SE NW 22-6s-11w; 2 miles north of Oretta field; IP 90 bbl., Cockfield, 8,422-40 ft.

SINGER—Beauregard, February; Magnolia Petroleum Co. 2-C Lutcher-Moore Lumber Co., NE SE 22-5s-11w; 4 miles west of West Pinegrove field; IP 130 bbl., Cockfield, perforations 7,620-31 ft.

SOUTH OBERLIN — Allen, February; Humble Oil & Refining Co. 1-B Mrs. J. A. Bel Estate, C NW NE 33-5s-4w; IP 74 bbl. Wilcox, perforations 12,658-62 ft.

SOUTH SHUTESTON—St. Landry, August; Sun Oil Co. 1 Darby, 2 miles south of Shuteston oil field, 6-8s-4e; IP flowed unestimated amount of dry gas, no gage, Oligocene, perforations 9,965-85 ft.

NEW PAYS

AVERY ISLAND—Iberia, April; Humble Oil & Refining Co. 10-B Petit Anse Co., Inc., 23-13s-5e; IP 292 bbl., Miocene, perforations 9,484-94 ft.

BAYOU DES GLAISE—Iberville, December; Humble Oil & Refining Co. 2-B E. B. Schwing et al, 86-8s-8e, IP 48 bbl. condensate and 2,041,000 cu. ft. gas, through perforations at 11,716-26 ft.

BAYOU LA FLEUR—Plaquemines, June; The Californa Co. 2 E. P. Brady et al, 34-16s-24e; IP 260 bbl., Miocene, perforations 10,485-90 ft.

BAYOU MALLET—Acadia, July; Union Sulphur Co., Inc., 1 Willie Sattler, 52-7s-1e; IP 32 bbl. condensate with 2,500,000 cu. ft. gas, Miocene, perforations 8,465-67 ft.

BELLE ISLE—St. Mary, March; Sun Oil Co. 9-A Belle Isle Corp., 2-18s-10e; IP 62 bbl., Miocene, perforations 8,109-33 ft.

BELLE ISLE—St. Mary, March; The Texas Co. 4 State-340-Atchafalaya Bay, in the bay-18s-10e; IP 2,000,000 cu. ft. gas, Miocene, perforations 9,790-9,806 ft.

BLACK BAYOU—Cameron, August; Shell Oil Co., Inc., 64 Watkins, 8-12s-12w; IP 253 bbl., Miocene, perforations 7,130-60 ft.

BRANCH—Acadia, April; The Union Sulphur Co., Inc., 1 Bruner-Bonin, 60-8s-2e; IP 4,300,000 cu. ft. gas and unestimated amount of condensate, Lower Chickasawhay, Oligocene, perforations 11,808-821 ft.

CAMERON MEADOW—Cameron, April; Magnolia Petroleum Co. and Humble Oil & Refining Co. 43 Cameron Meadow, 28-14s-13w; IP 40 bbl. condensate and 583,000 cu. ft. gas, Miocene, perforations 7,582-90 ft., and 7,556-64 ft.

CHARENTON—St. Mary, April, Lynn Oil Co. 2 Hine Estate, 31-13s-10e; IP 150 bbl., Miocene, perforations 6,480-90 ft.

DOG LAKE—Terrebonne, August; The Texas Co. 12-5 State Lease 200, Dog Lake Unit, 1-22s-15e; IP 200 bbl., Vicksburg, perforations 9,600-13 ft.

EGAN—Acadia, June; Sun Oil Co. and Sohio Petroleum Co. 3 E. M. Regan, 31-9s-1w; IP 390 bbl., Vicksburg, perforations 11,874-906 ft.

EGAN—Acadia, February; Sun Oil Co. and Sohio Petroleum Co. 1-A Hayes, 38-9s-1w; IP 175 bbl., Frio, perforations 9,897-9,908 ft.

GOOD HOPE—St. Charles, January; Shell Oil Co., Inc., 1 Blythe et al Unit 2, 41-12s-8e; IP 215 bbl., Miocene, perforations 9,134-40 ft.

IOWA—Calcasieu, April; Shell Oil Co., Inc., 35 F. Heyd, NE 13-9s-7w; IP 162 bbl., Miocene, perforations 5,180-88 ft.

IOWA—Calcasieu, September; Shell Oil Co., Inc., 39 Heyd, 13-9s-7w; IP 259 bbl., Miocene, perforations 5,080-88 ft.

LAKE MONGOULOIS—St. Martin, August; The Texas Co. 5 State-Lake Mongoulois, in lake-10s-9e; IP 238 bbl., Oligocene, perforations 10,666-704 ft.

LAFITTE — Jefferson, November; The Texas Co. 6 Geo. H. Kerner, 22-17s-24e, IP 243 bbl. from sand perforations at 10,404-15 ft.

LAKE PELTO—Terrebonne, November; Texas Co. 50 State-Lake Pelto, Lease 188, 16-23s-18e, IP 82 bbl. condensate and 1,487,000 cu. ft. gas, through perforations at 12,397-12,415 ft.

LAPEYROUSE — Terrebonne, November; British-American Oil Producing Co. 1 A. M. Dupont Corp., 15-20s-18e, IP 162 bbl. condensate and 3,365,000 cu. ft. gas, through perforations at 12,654-62 ft.

LA PICE—St. James, July; Shell Oil Co., Inc., 4 Mrs. Henry Schexnayder, 38-12s-15e; IP 176 bbl., Miocene, perforations 9,716-29 ft.

MAMOU—Evangeline, August; Magnolia Petroleum Co. 1 Hilde Deshotel, ½ mile northwest of discovery well, NW NE 7-5s-1e; IP 259 bbl., Wilcox, perforations 11,768-72 ft.

MUD LAKE—Cameron, April; Magnolia Petroleum Co. 1-B Lutcher, 33-14s-11w; IP 31 bbl. condensate and 2,983,000 cu. ft. gas, Miocene, perforations 9,640-50 ft.

NEW IBERIA—Iberia, March; Humble Oil & Refining Co. 2 Mayo Romero, 49-12s-7e; IP 65 bbl., Miocene, perforations 9,660-65 ft.

NEW IBERIA—Iberia, June; Humble Oil & Refining Co. 2 Mrs. Cecile W. Germany et al, 2-12s-7e; IP 297 bbl. Oligocene, perforations 9,905-16 ft.

NORTH CANKTON—Lafayette, January; Shell Oil Co., Inc., 1 Breaux-Kilchrist Unit,

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65-8s-4e; IP 55 bbl., Miocene, perforations 10,916-66 ft.

NORTH CANKTON—St. Landry, April; Sun Oil Co. 1 L. A. Guidry, 13-8s-3e; IP gas, no gage, shutin, Miocene, perforations 10,221-224 ft.

NORTH ELTON—Allen, August; Lloyd H. Smith 1 William Rees, 23-6s-3w; east side of production; IP 18 bbl. condensate and 1,320,000 cu. ft. gas, Frio, perforations 6,044-46 ft.

NORTH RICHIE—Acadia, November; A. J. Bankhead et al 1 Chas. Dischler, 17-7s-1w, IP 239 bbl. through perforations at 9,053-58 ft.

ORETTA—Beauregard, September; Magnolia Petroleum Co. 1 Webster Estate, 32-6s-11w; IP 90 bbl. condensate, Cockfield, perforations 8,583-88 ft.

PORT BARRE—St. Landry, June; Pan American Production Co. 17 H. L. Garland, 4-6s-5e; IP 381 bbl., Miocene, perforations 9,169-91 ft.

PORT BARRE—St. Landry, September; Pan American Production Co. 18 H. L. Garland, 4-6s-5e; IP 274 bbl., Miocene, perforations 8,270-86 ft.

SOUTH ELTON—Jefferson Davis, September; Stanolind Oil & Gas Co. 3-A W. H. Tupper, 32-7s-3w; IP 33 bbl. condensate, Oligocene, perforations 9,362-82 ft.

VENICE—Plaquemines, January; Tide Water Associated Oil Co. 28 Buras Levee District, 23-21s-30e; IP 189 bbl., Miocene, perforations 11,536-45 ft.

VENICE—Plaquemines, May; Tide Water Associated Oil Co. 29 Buras Levee District, 21-21s-30e; IP 326 bbl., Miocene, perforations 13,000-17 ft.

VENICE—Plaquemines, August; Tide Water Associated Oil Co. 32 Buras Levee District, 28-21s-30e; IP 260 bbl., Upper Miocene, perforations 11,775-805 ft.

WEEKS ISLAND—Iberia, April; Shell Oil Co., Inc., 2 State-Smith Unit 1, (world's deepest oil producer) 13-14s-6e; IP 553 bbl., Miocene, perforations 13,763-778 ft.

WHITE CASTLE—Iberville, July; Shell Oil Co., Inc., 23 Wilbert, 8-11s-12e; IP 195 bbl., Miocene, perforations 7,311-20 ft.

NORTH LOUISIANA

ASHLAND—Natchitoches, January; Halbouty 1 Detro, NW NW SE 1-13n-8w, Eagleford, 3,288-94 ft., IP 102 bbl., TD 3,299 ft.

KILLENS FERRY—Franklin, November; Atlas Oil & Refining Co. 1 Ayer Tbr. Co., NE NW SW NW 26-14n-9e, Tuscaloosa, 6,572-86 ft., IP 4,150,000 cu. ft. gas, TD 7,037 ft.

LAKE END—Red River, July; Halbouty 1 Sorill, SE NE NE 36-11n-10w, Nacatoch 1,207-34 ft. and 1,242-49 ft., IP 8 bbl., TD 1,277 ft.

MORRINGSPORT—Caddo, May; Union Producing Co. 1-A Noel, NE SW SW 11-19n-16w, Travis Peak, 5,697-710 ft., IP 8 bbl., 39.5° gravity, TD 9,239 ft.

NEGREET—Sabine, June; McDaniel Bros. 1 4-L-Co., NW SW NE 33-6n-12w, Wilcox 1,398-401 ft., IP 9 bbl., TD 2,517 ft.

PLAIN DEALING—Bossier, October; Barnsdall and Sohio 1 Carter-Burton, C NW NW 26-23n-13w, Tokio, 3,228-65 ft., IP 33 bbl., 41° gravity, TD 12,386 ft.

UNNAMED—Lincoln, April; California Co. 1 Richards, C NW SE 11-18n-2w, Cotton Valley-Bodcaw sand, 9,097-144 ft., IP 211 bbl., 53.6° gravity.

NEW PAYS

HAYNESVILLE—Claiborne, April; Ohio Oil 1 Bend-Beene Unit, NE SW NW 22-23n-8w, Bond sand-Cotton Valley, 9,943-10,-130 ft., IP 550 bbl., TD 10,781 ft.

SPIDER—DeSoto, July; Phillips 1 Nabors, C SW SE 28-12n-14w, Pettit, 6,180-200 ft., 38,000,000 cu. ft. gas, TD 6,684 ft.

ARKANSAS

LEWISVILLE, WEST—Lafayette, October; McAlester Fuel 1-A Adams Estate, C SW NW 16-16s-24w, Glen Rose, 3,977-92 ft., IP 169 bbl., 37° gravity, TD 4,358 ft.

PACE CITY—Ouachita, September; Mucher Tr. 1 Josie Smith, C NE SE SW 30-15s-17w, Glen Rose, 2,758-62 ft., IP 45 bbl., 28° gravity, TD 3,569 ft.

SPIRIT LAKE—Lafayette, July; Stewart et al 1 Moore Estate, C NW SE 14-16s-25w, Glen Rose & Kilpatrick lime, 4,108-18 ft. and 4,142-50 ft., IP 248 bbl., 36.5° gravity, TD 4,515 ft.

UNNAMED—Columbia, December; Atlas Oil & Refining Co. 1 Wayne, C SW SW 8-16s-19w, Pettit, 3,500-12 ft., IP 44 bbl., TD 6,627 ft.

UNNAMED—Nevada, May; Charles F. Steele et al 1 H. L. Waters, N/2 NW NE 20-14s-21w, Nacatoch, 1,207-18 ft., IP 20 bbl., 15.5° gravity, TD 2,263 ft.

NEW PAYS

VILLAGE—Columbia, June; E. G. Bradham et al 1 T. Crumpler, C NW NW 15-17s-19w, Cotton Valley, 5,567-74 ft. and 6,885-92 ft., IP 216 bbl. 48-49.2° gravity, TD 7,452 ft.

VILLAGE—Columbia, November; McAlester Fuel 1-D Harris, C NE SE 9-17s-19w, Travis Peak and Smackover lime, 4,770-98 ft. and 7,357-59 ft., IP 312 bbl., 40.4°-48.6° gravity, TD 7,362 ft.

WESSON—Ouachita, January; McAlester Fuel 1-A Wesson, C NW NW SE 24-15s-19w, James lime 3,086-102 ft., IP 135 bbl., TD 4,200 ft.

WESSON—Ouachita, February; McAlester Fuel B-2 Wesson, C NE SE NW 24-15s-19w, Travis Peak, 3,486-500 ft., IP 101 bbl., TD 3,951 ft.

WESSON—Ouachita, September; McAlester Fuel D-3 Wesson, SE SE SW NW 24-15s-19w, Nacatoch, 1,520-24 ft., IP 107 bbl., 18° gravity, TD 1,535 ft.

EXTENSION

CHAMPAGNOLLE—Union, February; Atlantic Refining Co. 1 Goode, S/2 N/2 NE NW 6-17s-13w, Smackover lime 5,637-47 ft., IP 34 bbl., TD 9,331 ft.

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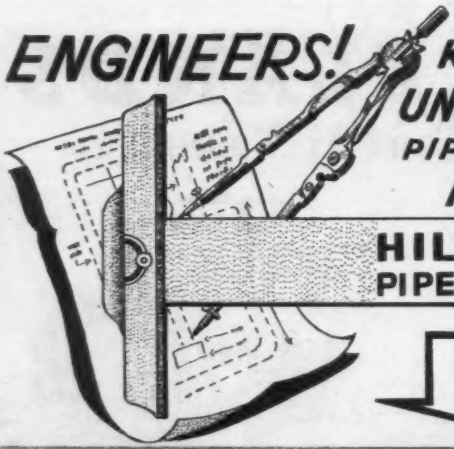

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MISSISSIPPI

KINGS—Warren, March; Magnolia Petroleum Co. 2 Ruth Pidgeon, SE SE 27-17n-4e, gas sand, 2,036-42 ft., IP 7,200,000 cu. ft. gas, TD 2,546 ft.

PINE RIDGE—Adams, December; Phillips Petroleum Co. 1 Artman, 36-8n-2w, Wilcox, 5,618-22 ft., IP 113 bbl., 40.9° gravity, TD 5,684 ft.

NEW PAY

LA GRANGE—Adams, February; Roeser & Pendleton 1 Baker-Maier, SE NE NW 34-6n-2e, Massive sand, 10,544-49 ft., IP 97 bbl., 39.2° gravity, TD 10,673 ft.

OKLAHOMA

ADAMS, NORTHEAST — Hughes, June; Mid-Continent Petroleum 1 Rogers, NE SE SW 26-9n-8e, sandy dolomite, 4,390 ft., IP 26 bbl., 39° gravity, TD 4,456 ft.

ALABAMA, WEST—Okfuskee, September; T. N. Berry 1 Catlett, NE NW SW 29-10n-11e, Booch 2,260-90 ft., IP 12 bbl., 38° gravity, TD 3,155 ft.

ALMA, NORTH—Stephens, April; Skelly & Sun Oil 1 Williams, SE SW NE 16-1s-4w, sand, 5,416-68 ft., IP 103 bbl., 20° gravity, TD 7,158 ft.

ALTUS, NORTHEAST — Jackson, April; Texas 1 Hickman, SW NW NW 6-1n-19w, Granite Wash, 3,022 ft., IP 16 bbl., 40° gravity, TD 3,022 ft.

ANTIOCH, SOUTHWEST—Garvin, March; Vickers Petroleum & Globe 1 Gibson, SE NE 30-3n-2w, sand 6,541-64 ft., IP 57 bbl., 42.8° gravity, TD 7,760 ft.

BIGHAM—Okfuskee, November; Fillmore; 1-A Palmer, C SE NW 34-11n-10e, Gilcrease sand, 3,069-94 ft., IP 1,630,000 cu. ft. gas, TD 3,123 ft.

BLUE HILL—McClain, May; Carter 1 Thompson, NE SE 36-8n-4w, Hunton, 9,970-10,035 ft., IP 420 bbl., 41.2° gravity, TD 10,070 ft.

BUCKEYE—Okfuskee, July; Loftus Drilling 1 Kenneda Unit No. 1, NE NE SE 14-12n-9e, Hunton, 3,686-91 ft., IP 6,750,000 cu. ft. gas, TD 3,705 ft.

BUTTERLY, NORTHEAST—Garvin, April; Continental 1 Butterly, NW SW SE 14-1n-1e, 3,871-4,020, IP 245 bbl., 13.5° gravity, TD 4,423 ft.

CACHE CREEK—Cotton, June; R. B. Farris et al 1 Wook-Kah-Nah, SW NW SW 1-4s-11w, shaly sand, 1,302-28 ft.; IP 120 bbl., 35.5° gravity, TD 1,328 ft.

CACHE CREEK, EAST—Cotton, October; Choate 1 Shelby, NW SW NW SE 5-4s-10w, sand, 1,356-58 ft., IP 60 bbl., 37° gravity, TD 1,358 ft.

CENTER—Pontotoc, July; Texas Co. 1 Gray, NE SE SW 18-4n-5e, sand, 905-15 ft., IP 650,000 cu. ft. gas, TD 3,249 ft.

COON CREEK—Logan, February; Sinclair Prairie et al 1 Teuscher, SE SE SW 34-15n-1w, 2nd Wilcox, 5,929-41 ft., IP 549 bbl., 38.6° gravity, TD 5,941 ft.

DRUM CREEK—Osage, September; A. G. Oliphant 1 Cox (Osage), SW NE NE 21-25n-4e, Cleveland, 2,855-80 ft., IP 30 bbl., 42° gravity, TD 3,571 ft.

ESSAQUANAHDALE—Cotton, May; Bridwell Oil 1 Houghton, SE NW NW 23-3s-11w, sand, 1,490-500 ft., IP 27 bbl., 35.7° gravity, TD 1,500 ft.

FOURDEE — Noble, October; Easton & Midland Co-op 1 Carter-Boyes, SE NE SE 19-22n-1w, Mississippi lime 4,798-815 ft., IP 128 bbl., 41° gravity, TD 5,183 ft.

FRANCIS, WEST—Pontotoc, November; Pine Estate 1 Doner, SE NE SW 19-5n-7e, Therman sand, 1,498-502 ft., IP 500,000 cu. ft., TD 3,700 ft.

GARCREEK—Seminole, August; Gulf Oil & Refining 1 Remaklus, SW SW NW 17-10n-7e, Gilcrease, 3,726-49 ft., IP 1,101 bbl., 41.2° gravity, TD 3,846 ft.

GARDEN GROVE—Okfuskee, November; Mid-Continent 1 Baker, SE NE NW 31-12n-7e, Prue sand, 2,944-50 ft., IP 20 bbl., 29° gravity, TD 4,361 ft.

GEORGIA—Payne, January; Home Gas 1 State (School Land), NW NE SW 36-18n-4e, Bartlesville, 3,690-705 ft., IP 4,500,000 cu. ft. gas, TD 3,705 ft.

GESSMAN, EAST—Lincoln, October; Olson Drilling 1 Maston, NW SE SW 35-14n-4e, Calvin, 3,007-22 ft., IP 3,360,000 cu. ft. gas, TD 3,022 ft.

GRIEF CREEK — Hughes, September; Deardorff 1 Gentry, NE NW NE 14-7n-9e, Booch, 2,874-94 ft., IP 57 bbl., 38.9° gravity, TD 3,003 ft.

HARMONY — Payne, October; Mulberry Oil 1 Newman, SE NW SE 2-17n-5e, Prue sand, 3,057-87 ft., IP 1,900,000 cu. ft. gas, TD 3,979 ft.

HOLDENVILLE—Hughes, February; Wm. Bartlett 1 Harjo, NE NW SE 6-7n-9e, sand, 2,835-52 ft., IP 20 bbl., TD 3,698 ft.

HOLDENVILLE, EAST—Hughes, November; B. C. Deardorf 1 Miller, SE SE SE, 5-7n-9e, Booch, 2,858-82 ft., IP 60 bbl., 38.8° gravity, TD 2,882 ft.

IRON CHAPEL—McClain, January; Carter 1 Mottinger, NW NW 5-6n-3w, Bromide sand, 10,833-11,020 ft., IP 687 bbl., 40.7° gravity, TD 11,237 ft.

JEFFERSON, NORTH—Hughes, November; Sherrod & Apperson 1 Barnard, SE SW NE 23-8n-8e, Wapanucka-Union Valley lime, 3,286-95 ft., IP 60 bbl., 38° gravity, TD 3,296 ft.

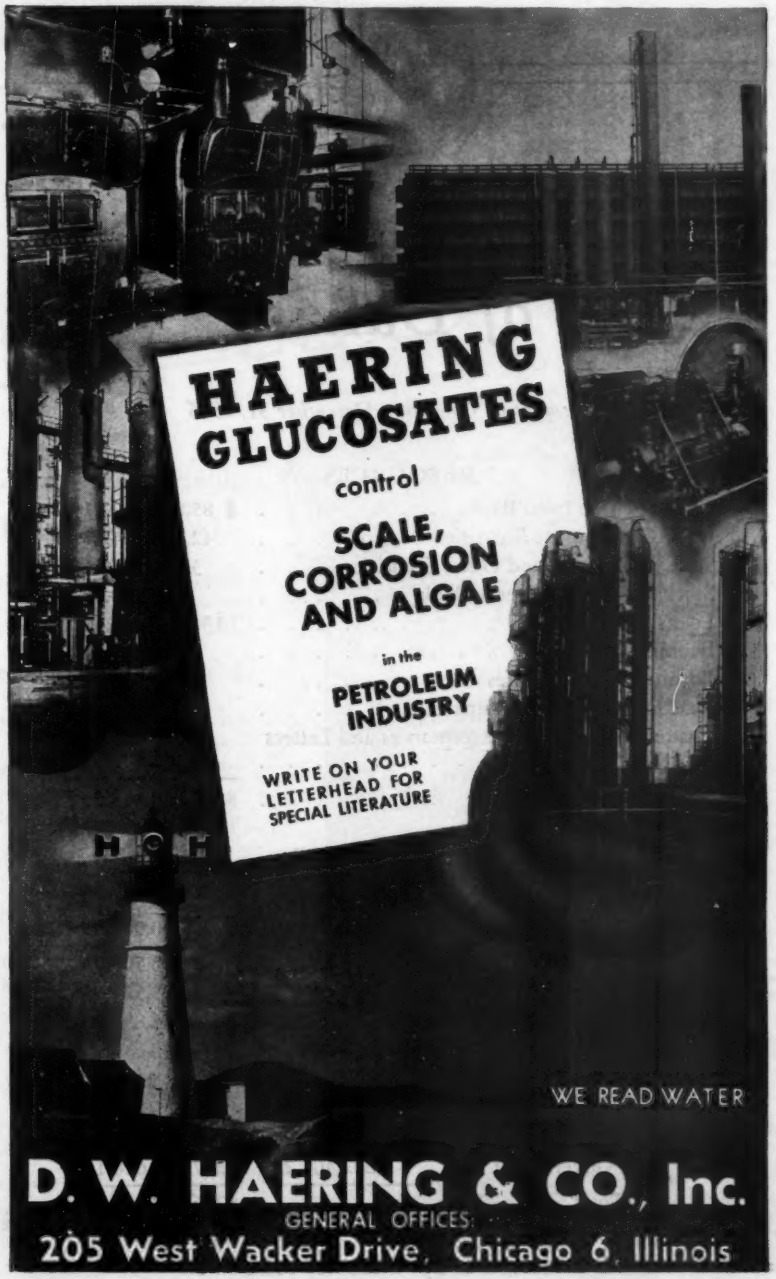
KATIE—Garvin, November; Carter 1 Buford C-148, C NW NW 5-1n-1w, Hoxbar sand, 6,070-94 ft., IP 278 bbl., 40.5° gravity, TD 7,905 ft.

KENDRICK, EAST—Lincoln, July; Texola 1 Strough, SW SW SW 11-15n-5e, Inola-Bartlesville, 3,670-80 ft., IP 30 bbl., 35° gravity, TD 4,174 ft.

MACOMB, SOUTHEAST — Pottawatomie; January; J. F. Smith 1 Kerker, SW SE NW 3-7n-3e, Booch, 4,546-63 ft., IP 50 bbl., 34° gravity, TD 4,925 ft.

MAYSVILLE, SOUTHWEST — Garvin, April; R. H. Dearing & Sons 1 McBride, NE NW NW 30-4n-3w, Pennsylvanian, 6,586-91 ft., IP 190 bbl., 65° gravity, TD 6,666 ft.

MEHAN, NORTHWEST—Payne, November; Fleet & Roodhouse 1 Ball, NE NE



SW 10-18n-3e, Bartlesville, 3,931-49 ft., IP 34 bbl., 38° gravity, TD 3,954 ft.

MILFAY SOUTHWEST—Creek, January; Davon 1 McVey, NE NE NW 29-15n-7e, Prue, 2,860-915 ft., IP 1,020,000 cu. ft. gas, TD 2,915 ft.

PARKLAND, EAST—Lincoln, January; Olson Drilling 1 W. A. Wilson, NE SE SW 20-16n-5e, Prue sand, 3,502-40 ft., IP 253 bbl., TD 3,546 ft.

ROBINSON CREEK—Lincoln, August; Danciger Oil & Refining 1 Pautlick, NW NE SW 15-12n-5e, Wilcox, 4,534-44 ft., IP 408 bbl., 25° gravity, TD 4,544 ft.

ROCKY—Pittsburgh, May; Atlantic 1 Hill, NW NW NW 25-8n-18e, Angular sand 6,150-235 ft., IP 3,910,000 cu. ft. gas, TD 6,500 ft.

SELF, NORTHWEST—Beckham, August; Stephens Petroleum et al 1 Pennington, NW NW NW 27-8n-25w, Permian sand, 1,950-2,084 ft., IP 936,000 cu. ft. gas, TD 2,402 ft.

SIVELLS BEND—Love, June; California 1 W. T. Wright, C NE NW 13-8s-1w, sand, 6,174-87 ft., IP 50 bbl., 37° gravity, TD 7,383 ft.

SOLDIER CREEK—Cotton, October; S. D. Johnson 1 Simon, NE SE NW 9-3s-11w, sand, 1,600-14 ft., IP 40 bbl., 37° gravity, TD 1,614 ft.

SPRING VALLEY, SOUTHEAST—Garfield, July; Ross Porter et al 1 Seigle, NE SE SW 32-23n-4w, Wilcox, 6,045-65 ft., IP 50 bbl., 40° gravity, TD 6,121 ft.

TRIBBEY, NORTH—Pottawatomie, July; Smith & Continental 1 Klinglesmith, SW SW SE 23-8n-2e, 2nd Wilcox, 5,637-39 ft., IP 249 bbl., 39.4° gravity, TD 5,639 ft.

UNNAMED—Canadian, February; Fox & Fox 1 Simpson, SE SE SW 9-13n-5w, Bartlesville, 7,082-95 ft., IP 5 bbl., TD 8,366 ft.

UNNAMED—Stephens, March; Atkinson 1-A Peck, SE SW SW 32-2s-6w, Fossil lime, IP 69 bbl., 23.5° gravity, TD 2,483 ft.

Republic National Bank of Dallas

Statement of Condition December 31, 1946

RESOURCES

Cash and Due from Banks	$ 85,895,032.81
U. S. Government Securities	42,406,284.17
State, Municipal, and Other Securities	3,194,427.56
Stock in Federal Reserve Bank	600,000.00
Loans and Discounts	136,788,020.60
Banking House	2,205,141.69
Furniture and Fixtures	285,073.77
Real Estate for Bank Expansion	259,669.22
Customers' Liability—Acceptances and Letters of Credit	5,174,898.78
Total	$276,808,548.60

LIABILITIES

Capital	$ 10,000,000.00	
Surplus	10,000,000.00	$ 20,000,000.00
Undivided Profits		2,150,507.93
Reserve for Taxes, Etc.		1,597,521.73
Acceptances and Letters of Credit		5,174,898.78

DEPOSITS:

Individual	$163,247,883.62	
Banks	79,795,331.27	
U. S. Government	4,842,405.27	247,885,620.16
Total		$276,808,548.60

MEMBER FEDERAL DEPOSIT INSURANCE CORPORATION

UNNAMED—Lincoln, July; F. Morgan Drilling 1-A P. Cash, NE NE SW 6-14s-4e, Oswego, 3,910-58 ft., IP 223 bbl., 42.2° gravity, TD 4,349 ft.

UNNAMED—Cotton, July; Featherstone et al 1 Tunnell, NW NW NW 7-4s-10w, sand, 1,309-19 ft., IP 150 bbl., 35° gravity, TD 1,319 ft.

UNNAMED—Hughes, August; Midland Co-op 1 Williams, SW NW NW 6-7n-9e, Booch, 2,773-97 ft., IP 4 bbl., TD 2,819 ft.

UNNAMED—Lincoln, August; Hubbell & Webb 1 G. Smith, SE NE SE 3-14n-6e, Hunton 4,042-54 ft., 6 bbl., TD 4,075 ft.

UNNAMED—Lincoln, May; L. B. Jackson 1-A Wagoner, NE NE NE 33-17n-6e, Red Fork, 3,015-24 ft., IP 5,000,000 cu. ft. gas, TD 3,024 ft.

UNNAMED—Okfuskee, May; Wilcox 1 Lewis, SE NE NE 24-12n-9e, Cromwell, 3,180-96 ft., IP 2,800,000 cu. ft. gas, TD 3,936 ft.

UNNAMED—Creek, July; Nabob 1 Meadors, SE SE NE 6-15n-7e, Wilcox, 3,920-60 ft., IP 35 bbl., TD 3,960 ft.

UNNAMED—Cleveland, September; Kenwood & Schermerhorn 1 Hummell, SW SW SE 28-10n-3w, Burgess, 7,879-8,012 ft., IP 260 bbl., TD 8,012 ft.

UNNAMED—Seminole, August; Winona 1 Coessee, NW NE NE 27-9n-5e, Earlsboro, 3,487-93 ft., IP 82 bbl., 40° gravity, TD 4,332 ft.

UNNAMED—Comanche, September; Creel & Lowe 1-A Lowe, SW NE NW 7-1n-10w, sand, 246-89 ft., IP 3 bbl., 33° gravity, TD 289 ft.

UNNAMED—Hughes, September; Leach & Warren 1 Dennis, NE SE NW 7-9n-10e, sand, 3,102-08 ft., IP 7,500,000 cu. ft. gas, TD 3,108 ft.

UNNAMED—Hughes, October; Sunray 1 Albright, SE SW SE 11-7n-9e, Booch, 2,884-98 ft., IP 82 bbl., 39° gravity, TD 2,898 ft.

UNNAMED—Pittsburgh, September; J. C. Craig 1 Wilkins, NW NW NW 8-2n-16e, sand, 271-91 ft., IP 4 bbl., 36.5° gravity, TD 335 ft.

UNNAMED—Garvin, October; Helmerich & Payne 1 Johnson, NE SE NE 16-1n-1w, sand, 2,657-64 ft., IP 12 bbl., 40° gravity, TD 2,985 ft.

UNNAMED—Okfuskee, December; Sunray 1 Sam, NE NE SW 10-10n-9e, Gilcrease, 3,056-69 ft., IP 6,500,000 cu. ft. gas, TD 3,312 ft.

UNNAMED—Cotton, December; Blalock 1 Varner, NW NW 10-3s-11w, sand, 1,609-35 ft., IP 47 bbl., TD 1,635 ft.

UNNAMED—Okfuskee, April; Wilcox 1 Hamby, SE SE NE 18-13n-10e, Dutcher, 2,812-27 ft., IP 28 bbl., 38.5° gravity, TD 2,850 ft.

VICTORY HILL—Pottawatomie, November; J. E. Wise 1 State, NE NE NW 16-10n-5e, Earlsboro, 3,805-17 ft., IP 32 bbl., 36° gravity, TD 4,754 ft.

WHITEHEAD—Garvin, March; Sohio 1 Tolbert, NE NW NE 9-3n-1w, sand, 4,535-40 ft., IP 5,250,000 cu. ft. gas, TD 4,589 ft.

WILZETTA, NORTHWEST—Lincoln, May; Sam King 1 Earlabough, SW SE NE 34-13n-5e, Mayes, 4,297-303 ft., IP 117 bbl., 43.4° gravity, TD 4,303 ft.

NEW PAYS

ADA DISTRICT, EAST—Pontotoc, February; J. E. Crosbie 1 Kelly, NE NE SW 9-4n-7e, Atoka sand, 1,811-13 ft., IP 10,000,000 cu. ft. gas, TD 4,456 ft.

ASHER, WEST—Pottawatomie, July; Berry, Kingery & Barker 1 Johnson, NW NW SW 27-6n-3e, IP 34 bbl., 36° gravity, TD 1,885 ft.

AYLESWORTH—Marshall, October; Burns Oil 1 Marshall, C NW SE 20-6s-7e, 2nd Bromide, 3,256 ft., IP 115 bbl., 36° gravity, TD 3,475 ft.

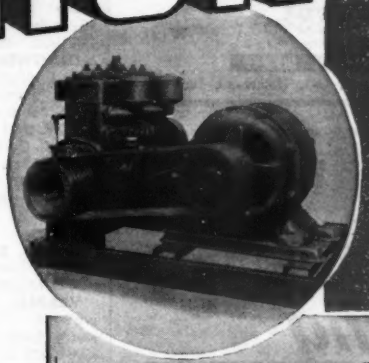
BOWLEGS—Seminole, July; Cities Service Oil 1-A Livingston, C NE NW 15-8n-6e, Earlsboro, 2,951-73 ft., IP 12 bbl., TD 4,880 ft.

BUTNER—Seminole, February; C. R. Ross 1 Hall, NW SE SE 3-9n-8e, Gilcrease, 3,213-49 ft., IP 6,700,000 cu. ft. gas, TD 3,533 ft.

COFFEE CREEK—Oklahoma, June; Gulf Oil 1 C. W. Moyer, NE SE NE 15-14n-2w, Wilcox, 6,098-110 ft., IP 16 bbl., TD 6,169 ft.

COON CREEK—Oklahoma, June; Jordan

LEADERSHIP



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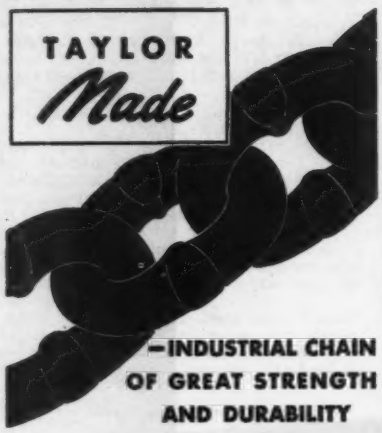

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YOUNG ENGINE CORP. CANTON, OHIO

1 Dulaney, SE NE SW 3-14n-1w, 1,247 ft., IP 460 bbl., TD 5,951 ft.

CRUCE — Stephens, October; Phillips 1 Jemison, SE NW NE 31-1n-5w, sand, 770-96 ft., IP 21 bbl., 18° gravity, TD 4,057 ft.

DEPEW—Creek, June; Bates & Springer 1 Lindsey, SE SE SW 26-15n-8e, IP 115 bbl., 35° gravity, TD 3,785 ft.

DUSTIN — Okfuskee, February; Public Service 1 Rose, NW SE 28-10n-12e, Gilcrease, 2,370-82 ft., IP 3,250,000 cu. ft. gas, TD 2,382 ft.

GREASY CREEK DISTRICT — Hughes, April; O. H. Grimes 1 Meaders, SW SW SE 23-8n-10e, Cromwell sand, 3,405-35 ft., IP 216 bbl., 41° gravity, TD 3,435 ft.

HOLDENVILLE, EAST—Hughes, December; Deardorf 1-A Miller, SE SE SE 5-7n-9e, Calvin, 885-906 ft., IP 125 bbl., 28° gravity, TD 913 ft.

HOOVER, NORTHWEST—Garvin, January; Helmerich & Payne 4 Freeman "A," SE SE NW 24-1n-1w, sand, 1,502-08 ft., IP 122 bbl., TD 1,554 ft.

HOOVER, NORTHWEST — Garvin, May; Neustadt 1 Grant, NW NW NE 25-1n-1w, sand, 1,162-328 ft., IP 1,000,000 cu. ft. gas, TD 2,510 ft.

JACKSON—Seminole, October; Manahan 1 Harris, NE SE SW 21-8n-7e, Gilcrease 3,287-89 ft., IP 94 bbl., 36° gravity, TD 3,303 ft.

KELLYVILLE DISTRICT—Creek, February; Skelly 1 Hobart, NE SW SE 8-17n-10e, Wilcox, 2,976-83 ft., IP 45 bbl., TD 2,989 ft.

KEOKUK — Seminole, December; Sam Trant 1-A Pipkin, NE NE SW 2-10n-6e, Calvin, 2,630-45 ft., IP 54 bbl., 40.4° gravity, TD 2,645 ft.

MARAMEC—Pawnee, July; Devonian Oil 1 Thornton, SE SE NW 34-20n-6e, Prue, 2,724-54 ft., IP 8 bbl., TD 3,075 ft.

MAYSVILLE, SOUTHWEST—Garvin, October; Carter Oil 1 Eskridge, NE NW SW 19-4n-2w, Bromide sand, 7,390-400 ft., IP 198 bbl., 42.6° gravity.

RINGWOOD—Major, February; Superior Oil 1 Manning, NE NE NW 27-22n-10w, Basal Pennsylvanian, 6,700-41 ft., IP 154 bbl., TD 8,275 ft.

SEMINOLE, EAST—Seminole, July; Portable 1 Campbell, SE SE SW 21-9n-7e, IP 4,000,000 cu. ft. gas, TD 3,438 ft.

STROUD—Lincoln, August; Texas 1 W. R. Yeldell, SE NW NW 11-14n-6e, Hunton, 4,040-48 ft., IP 10,000,000 cu. ft. gas, TD 4,060 ft.

ULAN, EAST — Pittsburg, June; Public Service Co. of Oklahoma 1 Brown, C NW SW 5-7n-14e, ungaged gas, TD 1,954 ft.

VELMA—Stephens, July; Amerada Petroleum 4 Thompson, SE NW NE 19-1s-5w, sand, 2,618 ft., IP 499 bbl., 36.6° gravity, TD 4,075 ft.

WALTERS—Cotton, October; Halliburton 1-A Tilly, SW SW NE 23-1s-10w, sand, 2,320-39 ft., IP 75 bbl., 31° gravity, TD 2,339 ft.

WAYNE, SOUTHWEST — McClain, November; Big Chief Drilling 1 White, NW SW SE 24-5n-2w, Hunton, 6,600-30 ft., IP 416 bbl., 43.7° gravity, TD 6,680 ft.

KANSAS

ALBERT, WEST—Rush, May; Darby & Bothwell 1 Wagner, NE NE NW 28-18s-16w, Lamotte sand, 3,623-44 ft., IP 21 bbl., TD 3,644 ft.

ALCONA—Rooks, July; Republic Natural Gas et al 1 Cooper, C SE SE 14-7s-20w, Arbuckle, 3,496-510 ft., IP 18 bbl., TD 3,539 ft.

BARRY, SOUTHEAST — Rooks, October; H. H. & B. Drilling 1 Hilgers, NE NE NE 13-9s-19w, Arbuckle, 3,480-84 ft., IP 2,735 bbl., 23° gravity, TD 3,484 ft.

BARTHOLOMEW—Sedgwick, July; Kingwick Oil Co. 1 Bartholomew, SE SE SW 30-27s-4w, Mississippi lime, 3,694-736 ft., IP 5,000,000 cu. ft. gas, TD 3,737 ft.

BOGGS—Barber, August; Skelly Oil Co. 1 Boggs "C," SW NE NE 17-33s-12w, Simpson, 4,824-42 ft., IP 45 bbl., TD 4,844 ft.

BOGGS, SOUTH—Barber, December; Continental Oil 1 Smith, NW NW NW 21-33s-12w, Simpson sand, 4,857-93 ft., IP 1,405 bbl., 28.4° gravity, TD 4,893 ft.

BURNETT, SOUTHWEST—Ellis, August; B & R Drilling Co. 1 Henderson, C E/2 SE NE 22-11s-18w, Arbuckle, 3,634-36 ft., IP 205 bbl., 22° gravity, TD 3,636 ft.

CATHERINE, SOUTH—Ellis, November; Texas 1 Dreiling, SW SW SW 15-13s-17w, Arbuckle, 3,560-83 ft., IP 559 bbl., 32° gravity, TD 3,583 ft.

CHANCE—Pratt, September; Lion Chemical Co. 1 Chance, NW NW NW 4-27s-13w, Arbuckle, 4,432-40 ft., IP 203 bbl., 34.3° gravity, TD 4,485 ft.

COW CREEK—Rice, October; Phil-Han Oil Co. 1 Chase, NW NE NW 28-18s-9w, Arbuckle, 3,249 ft., IP 100 bbl., TD 3,255 ft.

DONALD—Barber, March; Continental Oil and Kennecott & Cooper 1 D. W. Skinner, SE SE NE 33-31s-15w, Mississippi lime, 4,697-720 ft., IP 2,500,000 cu. ft. gas, TD 5,167 ft.

DUNDEE—Barton, October; Champlin Refining 1 Christianson, NE SW NE 29-20s-14w, Dundee, IP 6 bbl., TD 3,642 ft.

GRAY—Stafford, May; Alkay Oil Co. 1 Gray, SW NE NE 11-24s-13w, Lansing-Kansas City, 3,743-62 ft., IP 480 bbl., TD 3,882 ft.

HICKORY CREEK—Butler, March; Nadel & Gussman 1 Crowley, SW SW SE 11-28s-5e, Bartlesville sand, 2,695-2,738 ft., IP 100 bbl., TD 2,738 ft.

HINKLE—Sedgwick, May; Beech Aircraft Corp. 2 Hinkle, SE NE NE 1-27s-1e, Pennsylvanian conglomerate sand, 2,984-95 ft., IP 828 bbl., TD 2,995 ft.

KIPP, NORTHEAST—Stafford, May; Cities Service Oil Co. 1 Kipp, NE NE NE 23-25s-14w, Lansing-Kansas City, 3,844-63 ft., IP 1,260 bbl., 32.2° gravity, TD 4,303 ft.

KLUG—Barton, June; Black-Marshall 1 Klug, SE SE SE 28-17s-13w, Arbuckle, 3,416-21 ft., IP 52 bbl., 38° gravity, TD 3,421 ft.

LEHIGH—Marion, September; Anderson-Pritchard 1 Warkentin Unit, SE SE NW 27-19s-1e, Mississippi lime, 2,808-42 ft., IP 11 bbl., 36° gravity, TD 2,842 ft.

MARGARET—Sumner, April; Ashland Oil & Bartlett 1 James, NW SW SE 36-32s-2e, Arbuckle, 3,472-74 ft., IP 50 bbl., TD 3,477 ft.

MERTEN, NORTHEAST—Barton, Febru-

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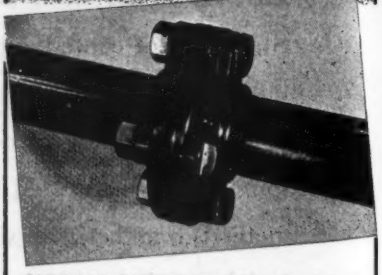

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HEAT EXCHANGER DIVISION

ary; Virginia Drilling 1 Howell, SE SE NE 36-18s-15w, Arbuckle, 3,494-3,502 ft., IP 100 bbl., TD 3,502 ft.

NYRA—Rooks, March; Atlantic Refining Co. 1 Carmichael, SE SE NE 16-9s-17w, Lansing-Kansas City, 3,429-35 ft., IP 35 bbl., TD 3,547 ft.

RUTHERFORD—Pawnee, August; Brack & Huber Corp. 1 Rutherford, SW NE NW 8-20s-16w, Arbuckle, 2,817-23 ft., IP 128 bbl., 41.4° gravity, TD 3,823 ft.

RYAN, WEST—Rush, September; Magnolia Petroleum 1 Tammen, SE SE SE 33-19s-16w, Arbuckle, 3,732 ft., IP 31 bbl., 40° gravity, TD 3,758 ft.

SALINA, SOUTH—Saline, June; W. J. Page 1 Hagg, NW SW SE 32-14s-2w, Viola, 3,246-53 ft., IP 91 bbl., 35° gravity, TD 3,252 ft.

SALTER—Butler, August; J. P. Gaty 1 Showalter, NE NW SW 23-28s-3e, Simpson, 3,001-03 ft., IP 40 bbl., 35° gravity, TD 3,003 ft.

SAUNDRA—Stafford, November; Virginia Drilling et al 2 Roberts, C W/2 SW SW 14-21s-12w, Arbuckle, 3,547-602 ft., IP 70 bbl., 37° gravity, TD 3,602 ft.

SCHOENCHEN—Ellis, July; W. N. Bartlett et al 1 Engle, NE NE SE 21-15s-18w, Arbuckle, 3,570-74 ft., IP 248 bbl., 32° gravity, TD 3,754 ft.

SILVER CITY—Woodson, December; Bisagno & Lane 1 Campbell, SE SE SE 19-26s-15e, Bartlesville sand 1,423-53 ft., IP 30 bbl., TD 1,529 ft.

STOOPS, SOUTHWEST—Pratt, September; Bridgeport Oil 1 Pride "C," NE NE NE 24-29s-13w, Viola, 4,483 ft., IP 164 bbl., 33.1° gravity, TD 4,490 ft.

UNNAMED—Finney, January; Wood River Oil Co. 1 Stecklejohn, NW SE 6-26s-32w, Permian, 2,539-668 ft., IP 7,900,000 cu. ft. gas, TD 2,668 ft.

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UNNAMED—Kearney, November; Stanolind Oil & Gas 1 Stallman, SW SW SW NE 24-23s-37w, Permian, 2,637-46 ft., ungaged gas, TD 2,773 ft.

WEBSTER—Rooks, March; Bird & Boering et al 1 Veverka, S/2 SW SW 27-8s-19w, Arbuckle, 3,404-09 ft., IP 2,549 bbl., TD 3,409 ft.

NEW PAY

MARGARET—Sumner, December; Ashland 3 James, SE NW SE 36-32s-2e, Mississippi lime, IP 20 bbl., TD 3,573 ft.

EXTENSIONS

HUGOTON—Kearney, March; Glenn Smith and Mid-Continent 1 Smalley, NW SW SE 3-25s-38w, Herrington, Krider-Winfield and Fort Riley, 2,385-94 ft., 2,415-43 ft. and 2,481-510 ft., IP 6,032,000 cu. ft. gas, TD 4,640 ft.

LOGAN—Phillips, March; Helmerich & Payne and Tide Water 1 Bowman, NW NW SE 3-5s-20w, Lansing-Kansas City, 3,149-56 ft., IP 201 bbl., TD 3,554 ft.

PALCO TOWNSITE—Rooks, January; Keyes Drilling 1 Neil, N/2 NE NE 20-9s-20w, Arbuckle, 3,849-65 ft., IP 211 bbl., TD 3,865 ft.

RAINBOW BEND—Cowley, February; Fred Manning 1 Lester, NW SW NW 23-33s-3e, Bartlesville sand, 3,290-302 ft., IP 5 bbl., TD 3,344 ft.

ILLINOIS

BEAVER CREEK SOUTH—Clinton, October; Garard 1 Viroegge-Mahlandt, SW SW NE 7-3n-2w, Benoist, 1,138-46 ft.; TD 1,146 ft.; IP 72 bbl.

BOOS EAST—Jasper, November; Secure Oil 1 C. L. Ireland, NW NW NW 11-6n-10e, Rosiclare, 2,657-62 ft., McClosky, 2,668-72 ft.; TD 2,673 ft.; IP 66 bbl.

BROWNS EAST—Wabash, September; Magnolia 1 Pfeiffer, SE NE NW 11-2s-14w; Cypress, 2,596 ft.; TD 3,050 ft.; IP 12 bbl.

CONCORD NORTH—White, October; Brehm et al 1 Callicotte, SE SE NW 10-6s-10e, Aux Vases, 2,950-60 ft.; TD 2,960 ft.; IP 248 ft.

CLARKSBURG—Shelby, August; Sohio 1 Flenner, SE NE NW 17-10n-4e, Benoist, 1,774 ft.; TD 1,788 ft.; IP 12 bbl.

COOKS MILLS NORTH—Coles, June; Nolan 1 Combs Estate, NE NE SW 23-14n-7e, Rosiclare, 1,771 ft.; TD 1,795 ft.; IP 12 bbl.

COVINGTON EAST—Wayne, August; K. & B. Drilling 1 Smith, W½ SW NE 21-1s-7e, Aux Vases, 3,144 ft.; TD 3,322 ft.; IP 73 bbl.

CROSSVILLE—White, October; Inland Producers 1 Rister, SE NE NE 15-4s-10e, McClosky, 3,123-33 ft.; TD 3,164 ft.; IP 18 bbl.

EPWORTH EAST—White, June; Allen 1 Hanna, NW NE SW 28-5s-10e, Cypress, 2,706 ft.; TD 2,743 ft.; IP 50 bbl.

FLORA SOUTH—Clay, February; Deep Rock Oil Corp. 1 Given, NW NW SE 4-2n-6e, McClosky, 2,978 ft.; TD 2,988 ft.; IP 189 bbl.

FRIENDSVILLE CENTRAL—Wabash, September; Engle 1 D. Wilkinson, SE SE SE 14-1n-13w, Benoist, 2,321 ft.; TD 2,344 ft.; IP 40 bbl.

FRIENDSVILLE NORTH—Wabash, June; Heldt 1 C. Smith, NW NW SE 12-1n-13w, Biehl, 1,644 ft.; TD 2,539 ft.; IP 8 bbl.

HIDALGO NORTH—Cumberland, June; Central Pipe Line 1 S. Meyers, NW SW 36-9n-9e, Rosiclare, 2,648 ft.; TD 2,776 ft.; IP 15 bbl.

HOOSIER—Clay, January; N. V. Duncan 1-A Leonard, SW SE NE 2-4n-7e, Cypress, 2,551 ft.; TD 3,007 ft.; IP 145 bbl.

HOOSIER NORTH—Clay, October; Eason Oil 1 N. E. Gibson, SW NW NW 35-5n-7e, Aux Vases, 2,806-23 ft.; TD 2,823 ft.; IP 30 bbl.

JUNCTION NORTH—Gallatin, October; J. Reznik et al 1 A. Valter, SE SE NE 3-9s-9e, Aux Vases, 2,726-34 ft.; TD 2,749 ft.; IP 8 bbl.

LANCASTER CENTRAL—Wabash, November; Sam Malis et al 1 Fite, N½ NE NW 7-1n-13w, Rosiclare, 2-813-20 ft.; TD 2,824 ft.; IP 900 bbl.

LANCASTER SOUTH—Wabash, September; Sam Malis 1 W. Litherland, NW NW

SE 20-1n-13w, McClosky 2,720 ft.; TD 2,809 ft.; IP 160 bbl.

LILLYVILLE—Cumberland, August; National Associated Petroleum Corp. 1 Krogmann, NW NE SE 31-9n-7e, McClosky, 2,450 ft.; TD 2,454 bbl.; IP 140 bbl.

MASSILON—Wayne, December; Texas 1 E. Hines "C," SE SE SE 1-1s-9e, Rosiclare, 3,254-62 ft.; TD 3,262 ft.; IP 190 bbl.

MAUD NORTH—Wabash, October; Hayes & Wolf 1 L. Smith, NW NW SW 17-1s-13w, Benoist, 2,627-33 ft.; TD 2,806 ft.; IP 26 bbl.

OMAHA EAST — Gallatin, April; Deep Rock Oil Corp. 1 Pioneer Trust Bank, NW NE SE 2-8s-8e, Levias, 2,853 ft.; TD 2,980 ft.; IP 19 bbl.

OMEGA — Marion, December; Doran & Delta 1 Millican Estate, SW SW SE 16-3n-4e, McClosky, 2,489-95 ft.; TD 2,495 ft.; IP 50 bbl.

RICHVIEW — Washington, August; National Consumers 1 Koelling-Patchford Unit, NW SW SE 10-2s-1w, Cypress, 1,520 ft.; TD 1,532 ft.; IP 31 bbl.

RIDGEWAY—Gallatin, September; Wiser Oil 1 Mitsdarffer, NE SE NW 24-8s-8e, McClosky, 2,842 ft.; TD 2,938 ft.; IP 21 bbl.

SANDOVAL WEST—Clinton, May; Doran 1 Thomas, NW NE NE 13-2n-1w, Cypress, 1,417 ft.; TD 1,423 ft.; IP 22 bbl.

STANFORD SOUTH—Clay, June; Dirickson 1 Howell, SE SW SW 9-2n-7e, Aux Vases, 2,959 ft.; TD 3,205 ft.; IP 175 bbl.

WAKEFIELD — Jasper, October; J. W. Rudy 1 Dewhirst, SE NE SE 16-5n-9e, Rosiclare, 3,122-27 ft.; TD 3,184 ft.; IP 40 bbl.

WILLOW HILL EAST—Jasper, February; Pure & Carter 1 Dodd, S½ SW NE 6-6n-11e, McClosky, 2,642 ft.; TD 2,732 ft.; IP 100 bbl.

NEW PAYS

ADEN SOUTH—Hamilton, June; H. H. Weinert 1 Hall, NE NW NW 29-3s-7e, Aux Vases, 3,250 ft.; TD 3,446 ft.; IP 26 bbl.

BENTON—Franklin, May; Shell Oil Co. 1 Doty, NW NE 25-6s-2e, Degonia, 1,737 ft.; TD 2,162 ft.; IP 72 bbl.

BROWNS—Wabash, November; Gilliam & Aspin 1 Hering, NE NE SW 27-1s-14w, Levias, 2,966-69 ft.; TD 2,971 ft.; IP 240 bbl.

COVINGTON EAST — Wayne, October; Tex Harvey 1 Marshall Smith, SE NE NW 21-1s-7e, Levias, 3,208 ft.; TD 3,260 ft.; IP 60 bbl.

COWLING—Edwards, July; G. H. Wickham 5 Schroeder, SE NE 27-2s-14w, Tar Springs, 2,226 ft.; TD 2,239 ft.; IP 50 bbl.

EPWORTH EAST—White, September; W. O. Allen 1 J. Williams, NW NW NE 33-5s-10e, Aux Vases, 3,002 ft.; TD 3,126 ft.; IP 24 bbl.

GEFF—Wayne, September; Robinson & Puckett 1 Haymes, SE NW NE 1-1s-7e, Levias, 3,140; TD 3,188 ft.; IP 5 bbl.

HERALD—White, June; Pure Oil Co. 1-B Austin Consolidated, SE NW NW 34-6s-9e, Rosiclare, 3,005 ft.; TD 3,160 ft.; IP 37 bbl.

HERALD—White, October; Oil Management 1 Harrell, SE SW NW 14-7s-9e, Levias, 2,962 ft.; TD 2,972 ft.; IP 243 bbl.

HOOSIER—Clay, July; K. & B. Drilling Co. 1 Stanley, NW SE SE 11-4n-7e, Aux Vases, 2,842 ft.; TD 3,003 ft.; IP 55 bbl.

HOOSIER—Clay, May; N. V. Duncan 1 Gibson, NW NW SE 2-4n-7e, Rosiclare, 2,894 ft.; TD 2,984 ft.; IP 264 bbl.

INGRAHAM WEST—Clay, February; Kingwood 1 W. H. Wyatt, SE NE SE 14-5n-7e, Benoist, 2,680 ft.; TD 2,938 ft.; IP 102 bbl.

INGRAHAM WEST — Clay, July; Cities Service 5 Wyatt, NE NW SW 13-5n-7e, Aux Vases, 2,762 ft.; TD 2,946 ft.; IP 150 bbl.

KEENVILLE—Wayne, July; Wiser Oil 1 Keen, SE SE NE 28-1s-5e, Levias, 3,060 ft.; TD 3,129 ft.; IP 150 bbl.

MARKHAM CITY WEST—Jefferson, May; Brehm 1 Modglin, SW NW SE 34-2s-4e, McClosky, 3,061 ft.; TD 3,092 ft.; IP 12 bbl.

MT. CARMEL—Wabash, June; First National Petroleum Trust 2-A Shaw-Courter, SE NE SE 7-1s-12w, Bridgeport sand, 1,367 ft.; TD 1,390 ft.; IP 13 bbl.

NEWTON—Jasper, September; Menhall 1 J. Easton, NW NW NW 13-6n-9e, Rosiclare, 2,939 ft.; TD 2,943 ft.; IP 168 bbl.

NOBLE NORTH — Richland, June; Pure Oil Co. 3 L. A. Wasson, NW SW SE 27-4n-9e, Rosiclare, 2,958 ft.; TD 2,990 ft.; IP 60 bbl.

OLNEY EAST—Richland, September; Texas Co. 2 R. Scherer, NE SW SE 23-4n-10e, Levias, 3,048 ft., Rosiclare, 3,053 ft.; TD 3,062 ft.; IP 16 bbl.

STANFORD SOUTH — Clay, September; Texas Co. 2 E. Kitley, NW NE NW 16-2n-7e, McClosky, 3,097 ft.; TD 3,109 ft.; IP 33 bbl.

STOKES-BROWNSVILLE — White, January; Pure & Carter 1 E. S. Munsey, NE NE NW 8-6s-9e, Hardinsburg, 2,555 ft.; TD 3,205 ft.; IP 169 bbl.

STOKES-BROWNSVILLE — White, October; Winfrey Drilling Co. 2 Manley, SW NW NE 17-6s-9e, Palestine, 2,085 ft.; TD 2,100 ft.; IP 10 bbl.

STORMS—White, April; Sinclair & Ohio 1 H. Aldrich, NW SE SE 1-6s-9e, Tar Springs, 2,354 ft.; TD 2,366 ft.; IP 42 bbl.

STORMS—White, May; Sinclair & Ohio 2 Riecken, NW NW SE 1-6s-9e, Aux Vases, 3,014 ft.; TD 3,030 ft.; IP 220 bbl.

THACKERAY — Hamilton, June; Ryford Oil 2 Johnson "A," NE SW SE 10-5s-7e, McClosky 3,535 ft.; TD 3,550 ft.; IP 128 bbl.

THACKERAY — Hamilton, July; Ryford Oil 3 Johnson, SW NW SE 10-5s-7e, Levias, 3,459 ft.; TD 3,958 ft.; IP 19 bbl.

TRUMBULL—White, July; Pure Oil Co. 1 W. T. Hall, NE NE NW 19-5s-9e, Aux Vases, 3,150 ft.; TD 3,158 ft.; IP 57 bbl.

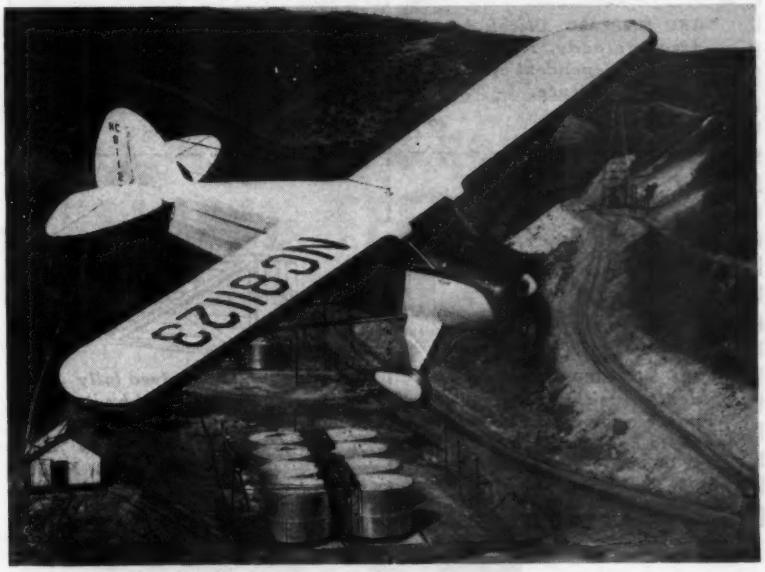
TRUMBULL—White, November; Lewis et al 1 Nibling, SE SW SE 2-5s-9e, Rosiclare, 3,260 ft.; TD 3,270 ft.; IP 146 bbl.

EXTENSIONS

BARTELSO WEST—Clinton, September; Soldschmidt 1 Loepker, NW NW NE 19-1n-3w, Cypress, 938 ft.; TD 963 ft.; IP 10 bbl.

BOOS NORTH—Jasper, November; Lynn 1 Houser-Sears, SE SE NW 21-6n-10e, Mc-

When Time is Money . . .



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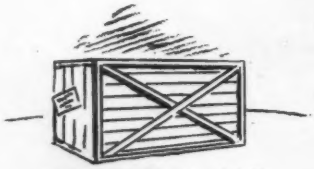

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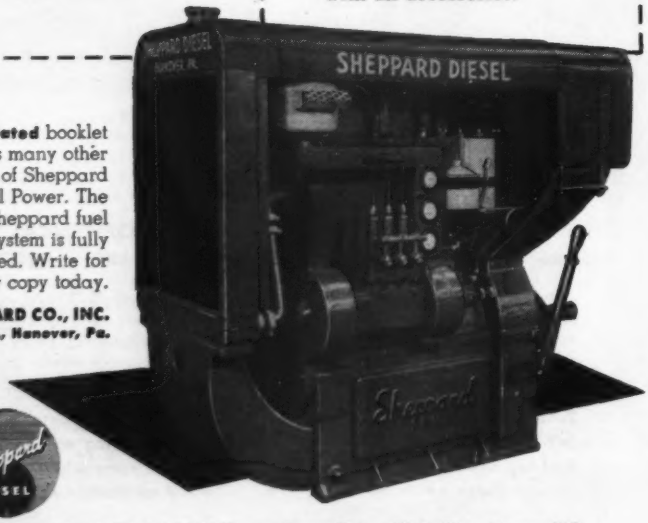

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Generating Sets—2,000 to 36,000 Watts • Power Units—3¾ to 56 continuous H.P.

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Closky, 2,800 ft.; TD 2,812 ft.; IP 117 bbl.

BROWNSVILLE—White, February; McBride 1 Pryor, SW SE 32-5s-9e, Levias, 3,099 ft.; TD 3,180 ft.; IP 5 bbl.

BUNGAY—Hamilton, June; Magnolia 1 Rohrer, NW NE SW 23-4s-7e, Aux Vases 3,273 ft.; TD 3,290 ft.; IP 27 bbl.

CISNE—Wayne, March; Lynn 1 Dye, N½ NW NW 2-1s-7e, McClosky, 3,188 ft.; TD 3,166 ft.; IP 256 bbl.

CALHOUN—Richland, April; Pure 1 Howard, NE NE SE 13-2n-9e, McClosky, 3,147 ft.; TD 3,170 ft.; IP 1,305 bbl.

CLAY CITY—Wayne, July; Nash Redwine 1 Downer, SW SW SE 31-1n-8e, Levias, 3,122 ft.; TD 3,216 ft.; IP 115 bbl.

CLAY CITY—Wayne, August; Slagter 1 Trotter, SW SE NE 20-1n-8e, McClosky, 3,096 ft.; TD 3,100 ft.; IP 66 bbl.

CLAY CITY—Wayne, September; Slagter 1 Gray, SW SE NW 16-1s-8e, Rosiclare, 3,108 ft.; TD 3,148 ft.; IP 30 bbl.

COVINGTON EAST—Wayne, October; Nation Oil 1 Sallagher, NE SW NW 16-1s-7e, McClosky, 3,219 ft.; TD 3,236 ft.; IP 10 bbl.

FRIENDSVILLE NORTH—Wabash, July; Levitt 1 A. L. Gher, SE SE 1-1n-13w, Biehl, 1,607 ft.; TD 1,621 ft.; IP 83 bbl.

GALLAGHER—Richland, April; Pure 1 Gallagher, SW SW SW 12-2n-9e, McClosky, 3,166 ft.; TD 3,181 ft.; IP 786 ft.

GOLDENGATE—Wayne, November; Perry Fulk 1 Ellis, S½ NW NW 29-2s-9e, Rosiclare, 3,449-57 ft.; TD 3,477 ft.; IP 30 bbl.

HERALD—White, August; Oil Management 1 Williams, NW NE SW 14-7s-9e, Aux Vases, 2,863 ft.; TD 2,882 ft.; IP 108 bbl.

HOOSIER—Clay, April; K. & B. Drilling Co. 1 Hastings, SW SE SW 12-4n-7e, Cypress, 2,603 ft.; TD 2,638 ft.; IP 25 bbl.

HOOSIER—Clay, June; Robinson & Puckett 1 Roley, NE SW SE 11-4n-7e, Rosiclare, 2,916 ft.; TD 2,934 ft.; IP 205 bbl.

INGRAHAM WEST—Clay, August; Silliam & Aspin 1 H. D. Lewis, NE NE SE 15-5n-7e, McClosky, 2,870 bbl.; TD 2,941 ft.; IP 15 bbl.

INGRAHAM WEST—Clay, November; Brinkerhoff Drilling Co. 2 Barlow, SE SW SW 11-5n-7e, Cypress, 2,539 ft.; TD 2,549 ft.; IP 165 bbl.

JOHNSONVILLE WEST—Wayne, May; Deep Rock 1 Spicer, SW SW NE 25-1n-5e, McClosky, 3,072 ft.; TD 3,086 ft.; IP 12 bbl.

JOHNSONVILLE WEST—Wayne, June; Deep Rock Ulyses, NE NW NW 30-1n-6e, McClosky lime; TD 3,178 ft.; IP 71 bbl.

KEENVILLE—Wayne, February; Mitchell 1 Cornstubble, SW SW SW 27-1s-5e, Aux Vases, 2,960 ft.; TD 2,973 ft.; IP 175 bbl.

KEENVILLE—E. L. Markham 1 Keeler-Ellis, NE SE SW 21-1s-5e, McClosky, 3,118 ft.; TD 3,126 ft.; IP 29 bbl.

LAWRENCE—Lawrence, July; Zantis 1 American National Bank, NW NE SW 23-3n-11w, McClosky, 1,849 ft.; TD 1,942 ft.; IP 18 bbl.

MARINE—Madison, November; G. T. Loper 1 Redding, NW NW NW 14-4n-6w, Silurian lime, 1,759 ft.; TD 1,793 ft.; IP 80 bbl.

MASON SOUTH—Clay, September; Lynch 1 Wright, SE NE NE 3-5n-5e, Rosiclare & McClosky, TD 2,521 ft.; IP 28 bbl.

MATTOON—Coles, February; National Consumers 1 Arthur, SW NW NE 2-12n-7e, Rosiclare, 1,934 ft.; TD 1,962 ft.; IP 22 bbl.

MAUD NORTH—Wabash, November; Hayes & Wolf 1 Meyer, SW SW NW 8-1s-13w, Benoist, 2,560-72 ft.; TD 2,578 ft.; IP 140 bbl.

MAUNIE NORTH—White, September; Thompson 1 E. Bruggun, NE NW SW 13-5s-10e, McClosky lime; TD 3,207 ft.; IP 20 bbl.

MT. AUBURN—Christian, April; Wrather 1 Thompson, SE SE SE 15-15n-2w, Silurian, 1,870 ft.; TD 1,896 ft.; IP 31 bbl.

MARKHAM CITY WEST—Jefferson, September; Gulf 1 Green, NW SW NW 10-3s-4e, McClosky, 2,990 ft.; TD 3,056 ft.; IP 128 bbl.

NEW HARMONY—White, August; Superior 27 H. C. Ford et al, NW SW NE 8-5s-

14w, McClosky, 2,935 ft.; TD 3,007 ft.; IP 400 bbl.

PARKERSBURG — Richland, September; Slagter 1 Fisher, SE NW SW 4-2n-14w, McClosky, 3,125 ft.; TD 3,150 ft.; IP 6 bbl.

ROLAND—White, April; Sun Oil Co. 1 Okerson, NW SW NE 9-7s-8e, McClosky, 3,018 ft.; TD 3,114 ft.; IP 12 bbl.

SAILOR SPRINGS—Clay, July, K. & B. Drilling Co. 1 Patton, SW NW SE 21-3n-7e, Benoist, 2,784 ft.; TD 3,080 ft.; IP 8 bbl.

ST. FRANCESVILLE EAST — Lawrence, September; Bauer 1 Brevoort, SE NE SW 10-2n-11w, Benoist, 1,701 ft.; TD 1,852 ft.; IP 10 bbl.

SAMSVILLE NORTH — Edwards, June; Central Pipe Line 2 Tarpley, NE NW 31-1n-14w, Benoist, 2,934 ft.; TD 2,940 ft.; IP 70 bbl.

SPRINGERTON—Hamilton, February; Sohio 1 Thomas, SW SW SE 11-4s-7e, Aux Vases, 3,263 ft.; TD 3,504 ft.; IP 8 bbl.

STANFORD SOUTH — Clay, September; Rudy 1 Tackett, NE SE NE 8-2n-7e, McClosky, 3,080 ft.; TD 3,087 ft.; IP 11 bbl.

TRUMBULL—White, August; W. I. Lewis 1 Bingham et al, SW NW SW 17-5s-9e, Aux Vases, 3,162 ft.; TD 3,173 ft.; IP 65 bbl.

WILLOW HILL—Jasper, April; Lynn 1 Hippler, NW SE 27-7n-10e, McClosky, 2,668 ft.; TD 2,776 ft.; IP 60 bbl.

IRON—White, June; National Associated Petroleum Corp. 1 Fisher, SW NE SW 13-6s-8e, Tar Springs, 2,328 ft.; TD 2,339 ft.; IP 84 bbl.

MICHIGAN

ARBELA—Tuscola, February; Fred Riddle 1 Clark, NE SE NW 33-10n-7e, Dundee, 2,551-62 ft., IP 11 bbl., TD 2,562 ft.

BRENNER—Allegan, February; W. Spencer Cook 1 Brenner, SE NW NE 15-3n-13w, Traverse, 1,682-84 ft., IP 226 bbl., TD 1,684 ft.

CATO-3 — Montcalm, February; Union Drilling & Producing 1 Douglass, NW SW SE 3-12n-8w, Dundee, 3,548-55 ft., IP 55 bbl., TD 3,555 ft.

COFFEE LAKE—Van Buren, June; W. D. Gannett 1 John Chamberlain, NE NW SW 17-1s-15w, Traverse, 1,128-30 ft.; IP 70 bbl.; TD 1,130 ft.

CRYSTAL (OCEANA)—Oceana, June; C. W. Teater 2 Lulu Ryan, SE NE NW 16-16n-16w, Traverse, 1,866-67 ft.; IP 35 bbl.; TD 1,867 ft.

DAY—Montcalm, June; McClure Drilling 1 E. Wicks, SW NE NE 36-11n-6w, Dundee 3,337-38 ft.; IP 50 bbl.; TD 3,345 ft.

ELKLAND—Tuscola, September; Gordon Oil 1 Palm Book Land Co., SE SE SW 31-14n-11e, Dundee, 2,678-86 ft.; IP 25 bbl.; TD 3,735 ft.

GREEN—Mecosta, May; Ashby Drilling 1 Battle-Rekeny, NE SW SE 18-16n-10w, Michigan stray, 1,239-45 ft.; IP 1,600,000 cu. ft. gas; TD 1,245 ft.

HOWELL—Livingston, November; Panhandle East. Pipeline 1 McPherson Estate, NW NW SE 35-3n-4e, Salina, 3,897-907 ft.; IP 6,400,000 cu. ft. gas; TD 3,907 ft.

LACOTA—Van Buren, April; Ford Oil Co. 1 Tolles Estate, SW SE NE 10-1s-16w, Traverse, 1,111-12 ft.; IP 100 bbl.; TD 1,112 ft.

MIO—Oscoda, May; Ohio 1 Mio Unit, SE NW SW 30-25n-3e, Richfield, 4,180-83 ft.; IP 20 bbl.; TD 5,135 ft.

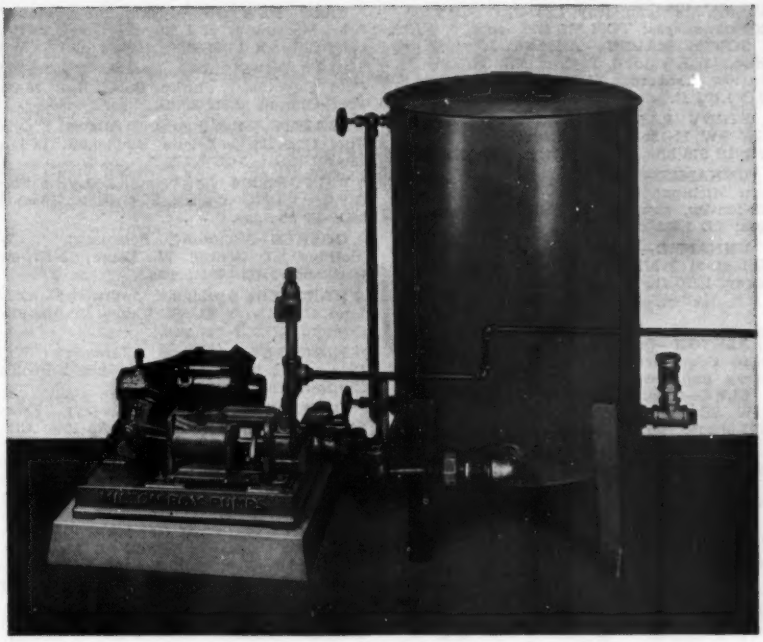
MORTON—Mecosta, November; Michigan Consolidated Gas Co. 1 Stickler, C SW 15-14n-8w, stray sand, 1,278-82 ft.; IP 1,663,000 cu. ft. gas; TD 1,282 ft.

MT. FOREST—Bay, April; Sohio & National Association 1 State, SE NE NE 1-17n-3e, Dundee, 2,836 ft.; IP 14 bbl.; TD 2,970 ft.

NORTH TROWBRIDGE—Allegan, October; Max Spidel 1 Lucy McCarn, NW NW NW 7-1n-13w, Traverse, 1,335-37 ft.; IP 15 bbl.; TD 1,337 ft.

NORTH ZEELAND—Ottawa, September; Clawson Development 1 Blauwkamp, C SE SE 2-5n-14w, Berea, 968-77 ft.; IP 1,000,000 cu. ft. gas; TD 980 ft.

ROLLAND—Isabella, May; Western Michigan Consumers 1 C. Lake, SE NW NE 30-



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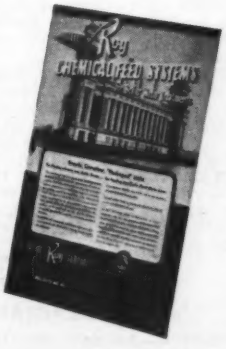
CHEMICAL FEED SYSTEMS

for Boiler Water Treatments

Authorities agree two distinct methods are necessary for chemically treating boiler water. Sodium Sulfite should be fed into the suction side of the feed water pump . . . to remove dissolved oxygen, insure against corrosion and prevent pitting. Other treating chemicals, such as phosphates, soda ash and caustics cannot usually be fed in this manner. Individual chemical feed directly into each boiler is the approved method . . . to prevent scale formation, control alkalinity and prevent embrittlement.

Milton Roy "Packaged Units" are available for both treating methods. For internal treating the unit includes heavy gage welded steel tank, gage glass, low level pump cut-out and alarm, together with necessary pump or pumps. For sulfite feed the unit includes 50 gal. 12 gage welded tank, gage glass, low level pump cut-out, bell alarm, doughnut float and one Milton Roy pump with screw adjustment of stroke.



These "Packaged Units" are available also with electronic control, to continuously operate at a speed proportional to the rate of feed water flow as measured by a standard type flow meter. Fully automatic control is thus obtained, treatments are precisely as required, waste of chemicals is avoided.

For complete description of these systems, with specifications, diagrams, selection tables, etc., write for Bulletin 451. If interested in automatic controls, ask also for Bulletin 468.

MILTON Roy COMPANY

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13n-6w, Michigan stray, 1,335-37 ft.; IP 2,500,000 cu. ft. gas; TD 1,337 ft.

SOUTH HAVEN — Allegan, July; J. E. Hood 1 Raymond Taylor, NE SW SE 20-1n-16w, Traverse, 1,102-03 ft.; IP 110 bbl.; TD 1,103 ft.

STONY LAKE—Oceana, December; NE SW SW 11-13n-18w, Traverse lime, 1,628-31 ft.; IP 570 bbl., 44.9°-gravity; TD 1,631 ft.

UNNAMED—Isabella, September; Western Michigan Consumers 1 Zoll-Cooper, C 29-13n-6w, stray sand; IP 1,200,000 cu. ft. gas; TD 1,282 ft.

UNNAMED—Mecosta, January; Chapman Oil et al 1 Minkel, S/2 SW SW 7-14n-8w, stray, 1,320 ft., ungaged gas, TD 3,746 ft.

NEW PAYS

ASHTON—Osceola, October; West Michigan Consumers 1 Carr, C SW 5-18n-10w, stray, ungaged gas; TD 1,273 ft.

ELBA—Gratiot, March; William 1 Long, NW SE SE 15-9n-1w, stray, ungaged gas, TD 670 ft.

GARFIELD—Clare, June; Pure Oil 1 Freer, N/2 NW SW 18-17n-6w, Richfield-Sylvania, 5,037 ft.; AP 28,000,000 cu. ft. gas and 100 bbl., 52°-gravity; TD 5,307 ft.

RICHFIELD—Roscommon, April; Sun 1 Childers, N/2 SW SE 15-24n-1w, Richfield, ungaged gas; TD 4,229 ft.

ROSCOMMON—Roscommon, April; Hilliard E-1 State, NE NW SW 20-21n-3w, stray, ungaged gas; TD 1,620 ft.

EXTENSIONS

ALLEGAN—Allegan, June; R. E. Bradley 1 LeVette, SE SW SE 23-2n-13w, Traverse lime, 1,461-62 ft.; IP 18 bbl.; TD 1,462 ft.

BRENNER—Allegan, December; Cook & Sleep 1 Miller, NW NE SW 11-3n-13w, Traverse; IP 65 bbl.; TD 1,675 ft.

BROOMFIELD—Isabella, April; Wicklund Development Co. 1 Hein, SE SE SE 13-14n-6w; IP 8 bbl.; TD 3,856 ft.

LOGAN—Ogemaw, May; Sun Oil 1 Adams-Walker, C NW 12-22n-3e, 1,461-64 ft.; IP 540,000 cu. ft. gas; TD 1,464 ft.

MONTEREY—Allegan, January; Tamblyn Development Co. 1 Brown, NE SE SE 4-3n-13w, Traverse lime, 1,672-74 ft.; IP 45 bbl.; TD 1,674 ft.

NEW SALEM—Ottawa, November; Boeve 1 Alphen, SE NE SE 35-5n-13w, Traverse, 1,654 ft.; IP 175 bbl.; TD 1,654 ft.

NORTH ZEELAND — Ottawa, October; Clawson Development Co. 1 Boss, C NE NE 14-5n-14w, Berea, 969-79 ft.; IP 53,000 cu. ft. gas; TD 990 ft.

OTISVILLE—Genesee, July; Hugh Heinig 1 Arlie Wint, SW SW SE 12-9n-8e, Berea; IP 10 bbl.; TD 1,497 ft.

ROSE CITY—Ogemaw, July; United Drillers & Producers 1 C. Anderson, NW NW NE 11-23n-2e, Richfield; IP 19 bbl.; TD 4,000 ft.

ROSE CITY—Ogemaw, December; United Drillers & Producers 1 State-Klacking, NW SE NE 3-23n-2e; IP 8 bbl.; TD 4,143 ft.

SHERMAN—Isabella, April; Chartiers Oil 1 Diehl, N/2 SW NW 29-15n-6w, Traverse lime, 3,280-93 ft.; IP 60 bbl.; TD 3,779 ft.

WHEATLAND—Mecosta, May; Rex Oil & Gas 1 Skalitzky-Weller, NW NW SE 8-14n-7w, Dundee dolomite, 3,700-01 ft.; IP 290 bbl., 47°-gravity, 2,000,000 cu. ft. gas; TD 3,701 ft.

OHIO

EXTENSIONS

ALBION—Ashland, May; G. B. Harmon 1 E. C. Hauenstein, 9-23n-15w; Clinton 2,905-11 ft., gas.

CHANDLERSVILLE — Muskingum, June; Industrial Gas Corp. 1 E. F. Clapper, 14-13n-12w; Medina 4,280-88 ft.; IP 18 bbl.

CHESTER—Meigs, September; Mathews Oil 1 Del White, 14-4n-12w; Berea, 1,638-41 ft., gas.

DEERFIELD—Morgan, April; Ohio Fuel Gas Co. 1 George E. Carr, 27-9n-13w; Clinton, 4,241-66 ft., gas.

EAST NEWTON—Muskingum, October; John Morrow et al 1 Eugene Good, 25-15n-14w; Clinton, 3,728-88 ft., IP 25 bbl.

EAST PENFIELD— Lorain, May; Ohio Fuel Gas Co. 1 Phillip Bobel, Lot 36-3n-17w; Clinton, 2,512-21 ft., gas.

FRAZIER—Muskingum, August; Ohio Fuel Gas Co. 1 Estella Buchanan, 15-11n-13w; Clinton, 3,687-3,735 ft., gas.

FULTONHAM—Muskingum, March; Pure Oil Co. 1 H. C. Eppley, 26-17n-15w; Clinton, 3,417-44 ft., gas.

GOSHEN—Mahoning, February; J. W. McIntosh 1 George W. Dunn, 1-17n-4w; Oriskany, 3,522-32 ft., gas.

HANOVER—Ashland, February; Ohio Fuel Gas Co. 1 O. S. Vance, 29-19n-16w; Clinton, 2,772-79 ft., gas.

HINCKLEY — Medina, January; Wm. Dempsey 1 Ervin Wilkinson, Lot 2-4n-13w; Clinton, 3,200-30 ft., gas.

JACKSON — Ashland, January; Frank Lyons 1 Harold Hastings, 35-23n-15w; Clinton, 2,970-81 ft., gas.

KNOX—Columbiana, February, Snee-Eberly 1 B. Humphrey, 34-17n-9w; Clinton, 5,366-5,469 ft., gas.

ROUND KNOB—Columbiana, February; Ohio Fuel Gas Co. and Galey 1 G. L. Powell, 22-10n-2w; Oriskany, 4,465-73 ft., gas.

VERNON—Trumbull, February; Hickman et al J. B. Everett, Lot 6-6n-1w; Oriskany, 3,306-32 ft., IP 8 bbl.

WEST BEDFORD—Coshocton County, November; Benedum-Trees 1 J. W. Lee, 16-5n-8w, Clinton, 3,350-92 ft., gas.

ELYRIA—Lorain County, December; Glenn Harmon 1 A. Shuster, 2-5n-17w, Clinton, 2,300-07 ft., gas.

ALFRED—Meigs County, December; J. D. Theis 1 C. C. Hawk, 17-4n-12w, Berea, 1,611-15 ft., gas.

BANKES—Morgan County, December; Industrial Gas Corp. 1 H. H. Bankes, 20-9n-13w, Clinton, 3,997-4,027 ft.; IP 25 bbl.

ROCKVILLE — Muskingum County, December; Four Way Oil & Gas Co. 1 W. D. Miller, 36-12n-12w, Clinton, 4,660-92 ft., gas.

SHAWVILLE—Lorain County, December; Ohio Fuel Gas Co. 1 Wm. Gilgenbach, 26-6n-16w, Clinton, 2,477-85 ft., gas.

WESTERN KENTUCKY

ANTHOSTON—Henderson, January; Ryan Oil Co. 1 Crafton, 9-O-24, Jackson sand 2,025-46 ft., TD 2,050 ft., IP 30 bbl. (This pool abandoned September 1946, after producing 934 bbl.)

GRIFFITH — Daviess, September; J. C. Ellis et al 2 Shipp Heirs, 9-P-28, Palestine 1,019-21 ft., TD 1,021 ft., IP 24 bbl.

GUFFIE—Daviess, November; Miller & Shiarello et al 1 Wiggins, 20-N-27, Tar Springs 1,590-1,653 ft., TD 2,252 ft., IP 85 bbl.

OWENSBORO — Daviess, April; Watkins Drilling Co. 1 J. E. Massey, 25-P-29, Waltersburg 1,158-1,167 ft., TD 1,167 ft., IP 5,259,000 cu. ft. gas.

ROBINSONVILLE—Union, January; Joe Engberg 1 Blake, 22-P-20, McClosky 2,576-79 ft., TD 2,579 ft., IP 96 bbl.

ROCHESTER—Butler, August; Bernier & Son 1 Barbee, 17-I-32, Pennsylvanian sand 382-98 ft., TD 401 ft., IP 10 bbl.

STANLEY—Daviess, October; Fox & Fox 1 Grant, 15-P-28, Tar Springs 1,225-40 ft., TD 1,935 ft., IP 80 bbl.

TUNNEL HILL — Henderson, October; Carter Oil Co. 1 Adams, 4-N-23, Cypress 2,226-46 ft., TD 2,253 ft., IP 100 bbl.

WILSON—Henderson, March; Basin Drilling Co. 1 Washburn, 6-P-23, McClosky 2,548-52 ft., TD 2,703 ft., IP 200 bbl.

NEW PAYS

CORYDON EAST — Henderson, January; Fleming & Swan 1 Green, 1-O-22, McClosky 2,620-25 ft., TD 2,628 ft., IP 120 bbl.

DIXIE—Henderson, March; Sun Oil Co. 1 G. Sutton, 22-O-22, Pennsylvanian sand 1,069-93 ft., TD 1,093 ft., IP 15 bbl.

HENDERSON—Henderson, February; Basin Drilling Co. 3 Carl Smith, 8-P-23, Waltersburg 1,624-36 ft., TD 1,636 ft., IP 77 bbl.

PANTHER—McLean, April; Miller & Shiarello 3-(4) Leachman, 12-N-27, Tar Springs 1,466-77 ft., TD 1,910 ft., IP 40 bbl.

UNIONTOWN — Union, January; Harry Ames 1 Girton Heirs, 16-P-20, Aux Vases 2,528-44 ft., TD 2,544 ft., IP 10 bbl.

EXTENSIONS

CLEOPATRA—Daviess, November; Sohio 1 (2) Pinkston, 7-N-29, Jackson sand 1,737-48 ft., TD 1,775 ft., IP 66 bbl.

DIXIE — Henderson, January; Kentucky Natural Gas 1 Arnett, 19-O-22, Pennsylvanian sand 1,030-48 ft., TD 1,050 ft., IP 1,540,000 cu. ft. gas

FRIENDSHIP CHAPEL—Daviess, June; S. Yunker et al 1 Mayfield, 5-N-32, Tar Springs 619-37 ft., TD 643 ft., IP 35 bbl.

ROBARDS — Henderson, August; Carter Oil Co. 1 Powell, 20-O-23, Levias 2,463-70 ft., TD 2,705 ft., IP 286 bbl.

WILSON — Henderson, August; Basin Drilling Co. 1 Abbott, 10-P-22, Waltersburg 1,709-13 ft., TD 1,714 ft., IP 80 bbl.

INDIANA

NEW HARMONY, EAST—Posey, October; Calvert & Willis 1 Wiley, SW SW NE 18-5s-13w, McClosky 2,974-84 ft., TD 3,024 ft., IP 226 bbl.

PRINCETON NORTH — Gibson, September; Eldon Heyden 2 Ed Crecelius, SW SW 5-2s-10w, McClosky 2,075-80 ft., TD 2,080 ft., IP 50 bbl.

SPRINGFIELD—Posey, May; H. E. Ledbetter 1 Noble Utley, SE SE SW 30-5s-13w, McClosky 3,006-11 ft., TD 3,111 ft., IP 18 bbl.

NEW PAYS

LYSLE—Gibson, January; Deep Vein Coal Co. 2 Smith Heirs, SW SE NE 1-2s-12w, McClosky 2,302-16 ft., TD 2,316 ft., IP 98 bbl.

MT. CARMEL EAST—Gibson, February; Ryan Oil Co. 1 Clift Heirs, SW SE SW 23-1s-12w, Tar Springs 1,959-68 ft., TD 2,365 ft., IP 15 bbl.

MT. CARMEL EAST—Gibson, March; Ryan Oil Co. 8 Fannie Putnam, NW SW NW 26-1s-12w, Benoist 2,109-19 ft., TD 2,126 ft., IP 5 bbl.

NEW HARMONY SOUTH—Posey, May; Delta Drilling Co. 12-A Elliott, 23-5s-14w, Pennsylvanian sand 1,318-65 ft., TD 1,365 ft., IP 200 bbl.

PRAIRIE—Posey, December; Dectrich et al 1-A Baker, NW SE 8-7s-14w, Mansfield sand 1,020-25 ft. and 1,030-35 ft., TD 1,045 ft., IP 60 bbl.

PRINCETON NORTH—Gibson, December; George & Wrather 1 Beloat, NW NW 8-2s-10w, Cypress sand 1,820-36 ft., TD 1,841 ft., IP 160 bbl.

EXTENSIONS

FRANCISCO WEST—Gibson, March; L. A. Plumb et al 1 Coleman Comm., SW SW NW 7-2s-9w, Rosiclare 1,791-1,804 ft., TD 1,969 ft., IP 25 bbl.

GRIFFIN—Posey, April; Fox & Fox 1 Milton Andrey, SW NW 10-4s-14w, Tar Springs 2,226-54 ft., TD 2,980 ft., IP 150 bbl.

NEW HARMONY SOUTH—Posey, March; R. E. Johnston et al 1 Barnett, SW NE NE 27-5s-14w, Hardinsburg 2,369-78 ft., TD 2,381 ft., IP 9 bbl.

NEW HARMONY SOUTH—Posey, June; Calvert et al 1 Fretageot, NE NW SE 24-5s-14w, Palestine 2,004-22 ft., TD 2,029 ft., IP 235 bbl.

TRENTON—Fayette, April; J. Snider et al 1 Sizemore, 15-13n-11e, Trenton 1,074-84 ft., TD 1,084 ft., IP 20,000 cu. ft. gas.

UNION-BOWMAN — Pike, May; W. L. Lichlyter 1 A. Conley, E½ SW NW 30-1s-9w, Waltersburg 1,055-58 ft., TD 1,058 ft., IP 120 bbl.

WHEELING—Pike, February; W. L. Lichlyter 1 R. S. Johnson, NE NE SE 9-1s-9w, Oakland City sand 1,394-1,404 ft., TD 1,404 ft., IP 30 bbl.

Exploratory and Development Drilling—

Where It Occurred and the Results

CALIFORNIA

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	27	1	1	25	115,722
February	18	4	1	13	90,839
March	23	0	0	23	124,769
April	19	0	0	19	73,147
May	22	1	0	21	86,996
June	12	0	0	12	42,776
July	24	2	1	21	116,922
August	20	1	0	19	113,075
September	13	0	0	13	54,071
October	24	1	0	23	113,756
November	28	0	0	28	150,085
December	30	0	0	30	142,722
Total	260	10	3	247	1,224,880

CALIFORNIA

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	144	126	4	14	579,524
February	110	101	3	6	460,154
March	134	123	1	10	598,520
April	151	129	9	13	644,723
May	115	104	8	3	438,141
June	128	115	7	6	500,520
July	134	121	5	8	575,662
August	120	108	5	7	585,928
September	114	100	6	8	445,572
October	119	106	4	9	437,321
November	142	131	6	5	533,602
December	119	101	4	14	484,079
Total	1,530	1,365	62	103	6,283,746

CALIFORNIA

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	171	127	5	39	695,246
February	128	105	4	19	550,993
March	157	123	1	33	723,289
April	170	129	9	32	717,870
May	137	105	8	24	525,137
June	140	115	7	18	543,296
July	158	123	6	29	692,584
August	140	109	5	26	699,003
September	127	100	6	21	499,643
October	143	107	4	32	551,077
November	170	131	6	33	683,687
December	149	101	4	44	626,801
Total	1,790	1,375	65	350	7,508,626

CALIFORNIA

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
SAN JOAQUIN—					
Ant Hill	19	14	0	5	1,555
Belridge, South	85	83	0	2	2,155
Blackwells Corner	7	7	0	0	136
Buena Vista Hills	22	22	0	0	7,067
Coalinga, East	15	14	0	1	1,899
Coalinga, Nose	4	3	0	1	1,447
Coalinga, West	3	3	0	0	89
Coles Levee, N.	9	8	0	1	7,710
Coles Levee, S.	1	1	0	0	643
Cymric	116	108	0	8	17,758
Edison	76	72	0	4	36,005
Elk Hills	19	16	0	3	3,809
Greeley	4	4	0	0	1,847
Helm	25	23	0	2	4,990
Jacalitos	17	12	0	5	1,865
Kern Front	35	34	0	1	2,280
Kern River	21	19	0	2	351
Kettleman North Dome	19	19	0	0	13,361
Lanare	23	18	0	5	3,259
Lost Hills	41	41	0	0	1,742
McKittrick	9	8	0	1	403
Midway-Sunset	24	23	0	1	1,776
Mountain View	23	19	0	4	6,766
Mount Poso	16	14	0	2	610
Paloma	22	20	0	2	12,467
Pleasant Valley	2	2	0	0	1,051
Pyramid Hills	1	1	0	0	24
Race Track	14	14	0	0	4,532
Raisin City	7	5	0	2	985
Riverdale	9	8	0	1	1,897
Rosedale	2	0	0	2	0
Round Mountain	12	12	0	0	855
Salt Creek	21	18	0	3	7,975
Santiago	25	23	0	2	17,276
Sheep Springs	4	3	0	1	1,969
Tejon	38	38	0	0	3,423
Misc. small pools	8	5	0	3	223
COASTAL—					
Aliso Canyon	8	8	0	0	3,239
Capitan	6	6	0	0	2,047
Del Valle, East	3	2	0	1	670
Del Valle, West	1	1	0	0	98
Elwood	7	7	0	0	1,326
Gato Ridge	5	5	0	0	1,373
Newhall Potrero	9	9	0	0	2,915
Oak Canyon	1	1	0	0	85
Oxnard	1	1	0	0	128
Padre Canyon	3	3	0	0	2,293
Ramona	28	28	0	0	3,846
San Miguelito	9	9	0	0	8,321
Santa Maria	45	42	0	3	9,066
Santa Maria Valley	50	46	0	4	7,708
Ventura Avenue	38	38	0	0	18,530
Ventura-Newhall	35	29	0	6	4,487
LOS ANGELES—					
Alondra	2	1	0	1	1,165
Brea Olinda	9	9	0	0	2,110
Buena Park	2	2	0	0	138
Coyote, East	9	9	0	0	1,032
Coyote, West	11	11	0	0	1,917
Dominguez	11	10	0	1	1,950
East Los Angeles	6	4	0	2	2,527
Huntington Beach	55	52	0	3	14,324
Hyperion	2	1	0	1	89
La Mirada	1	1	0	0	130
Leffingwell	1	1	0	0	67
Long Beach	1	1	0	0	45
Montebello	3	2	0	1	339
Newport	77	70	0	7	11,629
Potrero	2	2	0	0	605
Richfield	7	6	0	1	330
Rosecrans	3	3	0	0	153
Sansinena	1	0	0	1	0
Seal Beach	18	18	0	0	8,951
Torrance	21	20	0	1	926
Wilmington	183	183	0	0	107,352
GAS FIELDS—					
Corning	1	0	1	0	0
Dixon, North	2	0	2	0	0
Dixon, South	5	0	3	2	0
Dunnigan Hills	2	0	2	0	0
Durham	1	0	1	0	0
Elk Hills	2	0	2	0	0
El Segundo	5	0	5	0	0
Goleta	1	0	1	0	0
Kirby Hills	4	0	3	1	0
McKittrick	1	0	1	0	0
Midway-Sunset	1	0	1	0	0
Rio Vista	16	0	16	0	0
Santa Maria	1	0	1	0	0
Suisun	1	0	1	0	0
Thornton	2	0	2	0	0
Tompkins Hill	2	0	2	0	0
Trico	22	0	19	3	0
Winters	2	0	2	0	0
Wildcats	247	0	0	247	0
Total	1,790	1,375	65	350	394,118

CALIFORNIA

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Butte	2	0	1	1	9,500
Fresno	11	0	0	11	85,404
Kern	113	2	0	111	423,777
Kings	6	0	0	6	38,908
Los Angeles	34	8	0	26	249,145
Madera	1	0	0	1	3,085
Merced	1	0	0	1	4,400
Monterey	7	0	0	7	24,805
Orange	22	0	0	22	113,690
Sacramento	1	0	0	1	4,502
San Joaquin	3	0	0	3	17,235
San Luis Obispo	5	0	0	5	16,257
San Mateo	2	0	0	2	4,638
Santa Barbara	9	0	0	9	43,694
Santa Cruz	1	0	0	1	2,575
Solano	8	0	1	7	44,993
Stanislaus	2	0	0	2	10,199
Tehama	4	0	0	4	9,675
Tulare	8	0	0	8	28,790
Ventura	16	0	0	16	72,388
Yolo	4	0	1	3	17,220
Total	260	10	3	247	1,224,880

WEST TEXAS

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	17	3	0	14	90,016
February	16	4	0	12	93,721
March	27	3	0	24	137,815
April	13	4	0	9	78,511
May	19	9	0	10	96,393
June	17	1	1	15	70,394
July	19	6	0	13	140,857
August	27	4	0	23	120,284
September	21	7	0	14	120,102
October	17	4	0	13	89,674
November	17	1	0	16	74,382
December	14	3	0	11	92,967
Total	224	49	1	174	1,205,116

WEST TEXAS

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	115	95	5	15	516,194
February	103	95	1	7	501,159
March	132	124	0	8	613,411
April	114	105	1	8	537,795
May	110	105	0	5	563,365
June	140	130	1	9	708,054
July	112	101	0	11	531,266
August	156	150	1	5	764,957
September	123	111	1	11	602,866
October	159	146	0	13	800,858
November	147	120	6	21	689,525
December	145	131	1	13	772,252
Total	1,556	1,413	17	126	7,609,402

WEST TEXAS

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	132	98	5	29	606,210
February	119	99	1	19	594,880
March	159	127	0	32	751,226
April	127	109	1	17	616,306
May	129	114	0	15	659,758
June	157	131	2	24	778,448
July	131	107	0	24	672,123
August	183	154	1	28	885,241
September	144	118	1	25	722,968
October	176	150	0	26	890,532
November	164	121	6	37	763,907
December	159	134	1	24	865,219
Total	1,780	1,462	18	300	8,814,518

WEST TEXAS

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Andector	3	2	0	1	26,221
Anton	5	4	0	1	35,975
Barnhart	3	3	0	0	27,640
Block 31	21	19	0	2	204,994
Block 12	19	16	1	2	123,340
Clara Couch	5	5	0	0	9,842
Cowden, N.	15	15	0	0	75,505
Cowden, S.	5	5	0	0	21,289
Crossett	3	3	0	0	16,313
Dean, & W.	5	5	0	0	25,346
Dollar Hide	6	4	0	1	50,985
Doss	6	6	0	0	42,889
Dune	3	3	0	0	10,185
Edwards	8	7	0	1	28,911
Emperor—Deep	6	5	0	1	25,048
Emperor—Holt	2	2	0	0	9,658
Fort Stockton	23	21	0	3	69,910
Foster	18	18	0	0	78,850
Fuhrman-Mascho	9	9	0	0	40,675
Fullerton	92	92	0	0	663,339
Fullerton—Devonian	29	29	0	0	251,706
Fullerton—Ellenburger	2	2	0	0	19,871
Garza	82	81	0	1	242,954
Goldsmith	11	11	0	0	47,042
Goldsmith—Clear Fork	3	3	0	0	20,906
Goldsmith—Devonian	3	2	0	1	25,304
Howard-Glasscock	48	39	0	9	68,091
Iatan-East Howard	28	25	0	3	81,134
Kermit	4	2	1	1	12,011
Keystone—Colby	23	22	0	1	80,407
Keystone—Devonian	4	4	0	0	32,435
Keystone-Ellenburger	71	71	0	0	705,757
Keystone—Holt	30	29	0	1	143,285
Leck	3	3	0	0	9,236
Lehn Apco	4	3	0	1	8,270
Leonard	5	3	0	2	16,319
Levelland	17	16	0	1	82,305
McCamey	43	39	0	4	105,986
McElroy	42	41	0	1	127,345
Mahee	14	13	0	1	66,372
Martin	8	6	0	2	71,746
Means	26	24	0	2	117,225
Monahans	8	5	0	3	39,607
Monahans—Clear Fork	2	2	0	0	9,956
Monahans, N.	3	1	0	2	17,195
Olson	9	9	0	0	18,178
Schleicher—Strawn	3	3	0	0	17,404
Pecos Valley—H.G.	21	17	1	3	40,610
Penwell	4	4	0	0	14,470
PHD	9	4	0	5	32,967
Russell	9	9	0	0	69,985
Sand Hills	32	31	0	1	145,996
Sharon Ridge	87	86	0	1	158,359
Slaughter	69	69	0	0	374,663
Snyder	6	6	0	0	17,355
Spraberry	6	6	0	0	22,907
Taylor-Link	21	13	2	6	34,039
Toborg	22	19	0	3	8,433
Todd Deep	32	29	0	3	200,639
TXL — Devonian	46	44	0	2	373,550
TXL — Ellenburger	66	65	0	1	632,912
Waddell	29	29	0	0	101,888
North Ward-Estes	30	30	0	0	86,232
Wasson	25	25	0	0	136,064
Wasson 66 & 72	8	6	0	2	56,723
Weiner	4	2	0	2	12,675
Welch	81	79	0	2	399,391
Wheeler	9	9	0	0	96,299
White & Baker	17	16	0	1	31,263
World Powell	11	11	0	0	29,077
Yates	8	5	1	2	12,550
Miscellaneous	122	67	11	44	495,493
Total	1,556	1,413	17	126	7,609,402

A husky little Duck

in a big puddle

WE have five stores in three states. A little outfit, true—but you'll find that we more than make up for our modest size in service and the stocks of well known equipment we carry.

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GENERAL MACHINE AND TOOL CO.
FOURTH NATIONAL BANK BLDG., WICHITA, KANSAS
STORES: Russell, Augusta and Eureka, Kansas; Salem, Illinois; New Harmony, Indiana
SALES OFFICES: Wichita, Kansas and Tulsa, Oklahoma

WEST TEXAS

Wildcat Completions by Counties

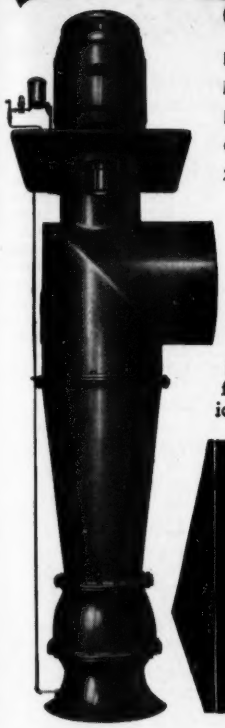
County—	Comp.	Oil	Gas	Dry	Footage
Andrews	27	10	0	17	189,194
Coke	5	1	0	4	28,274
Concho	4	0	0	4	16,509
Crane	13	2	0	11	91,834
Crockett	17	1	0	16	58,625
Crosby	2	0	0	2	5,879
Dawson	7	1	0	6	30,877
Ector	15	9	0	6	129,722
Fisher	10	1	0	9	44,252
Gaines	3	2	0	1	25,549
Garza	12	1	0	11	43,416
Glasscock	2	1	0	1	14,471
Hale	2	1	0	1	12,318
Hockley	6	2	0	4	37,795
Howard	5	2	0	3	24,832
Irion	2	0	0	2	9,889
Kent	3	1	0	2	23,841
Lamb	2	0	0	2	12,707
Lubbock	5	0	0	5	32,154
Midland	2	0	0	2	17,534
Mitchell	4	2	0	2	14,273
Pecos	19	1	0	18	62,839
Regan	2	0	0	2	13,325
Reeves	2	0	0	2	9,569
Runnels	7	2	0	5	28,675
Schleicher	2	1	0	1	12,205
Sterling	3	0	0	3	16,785
Terry	3	0	0	3	15,515
Tom Green	4	0	0	4	9,876
Upton	6	2	0	4	20,511
Ward	4	1	0	3	18,123
Winkler	7	4	0	3	45,937
Miscellaneous	17	1	1	15	87,811
Total	224	49	1	174	1,205,116

TEXAS PANHANDLE

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	1	0	0	1	4,005
February	1	0	0	1	4,034
April	2	0	0	2	11,947
June	1	0	0	1	4,090
Total	5	0	0	5	24,076

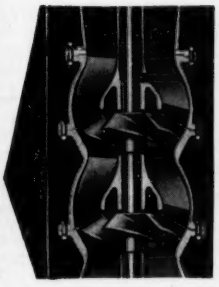
PEERLESS
Hydro-Foil PUMPS
Move huge volumes of water against low and medium heads



PEERLESS MIXED-FLOW PUMPS

CAPACITIES: UP TO 220,000 G.P.M.

Cutaway view of Mixed-Flow multi-stage pump impeller and bowl construction revealing high efficiency impellers utilized for more economical water lift.



To rapidly move and re-move maximum amounts of water.

The most modern principles of aero and hydro-dynamic design are embodied in Peerless Mixed-Flow pump design and construction, attaining new high efficiencies in large volume water lift and lowering overall maintenance and pumping costs.

Numerous successful applications of Peerless Mixed-Flow Pumps include: drainage; sewer and flood control service; dewatering; irrigation water diversion; flooding of agricultural lands; industrial and process work including condensers, circulation of liquors, etc.

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Peerless pumps, embodying the Hydro-Foil principle, are also available in the propeller type and are capable of handling identical capacities of the Peerless mixed-flow pump. Request Bulletin B-148 on design, construction and application data of these two outstanding types of Peerless Pumps, for large-volume water pumping.

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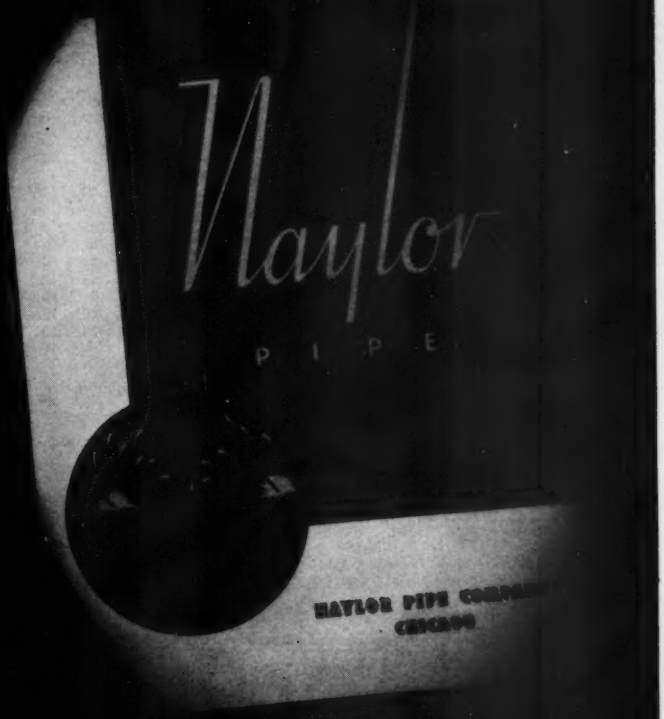
for Oil Men



This book tells you what you want to know about the right pipe to use on applications like these: De-watering pipe, gas and oil lines, gas and oil gathering lines, salt water disposal lines, sludge lines, surface casing (threaded), vacuum lines, syphon pipe, tank gauge pipe and tank swing pipe. Write for your copy today.

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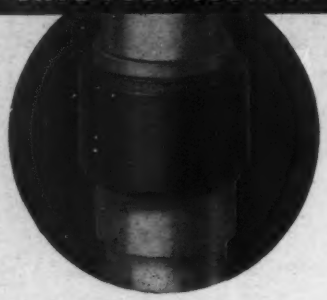

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TEXAS PANHANDLE

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	27	13	13	1	82,138
February	30	13	14	3	90,219
March	33	14	14	5	99,496
April	28	16	9	3	86,349
May	20	9	7	4	56,938
June	30	12	11	7	88,254
July	20	5	11	4	58,117
August	24	12	12	0	70,857
September	26	15	10	1	79,707
October	30	19	9	2	93,824
November	15	10	3	2	43,726
December	22	11	8	3	69,734
Total	305	149	121	35	919,359

TEXAS PANHANDLE

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	28	13	13	2	86,143
February	31	13	14	4	94,253
March	33	14	14	5	99,496
April	30	16	9	5	98,296
May	20	9	7	4	56,938
June	31	12	11	8	92,344
July	20	5	11	4	58,117
August	24	12	12	0	70,857
September	26	15	10	1	79,707
October	30	19	9	2	93,824
November	15	10	3	2	43,726
December	22	11	8	3	69,734
Total	310	149	121	40	943,435

TEXAS PANHANDLE

Development Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Carson	36	6	25	5	109,614
Collingsworth	8	0	2	6	22,204
Gray	65	52	9	4	191,893
Hansford	3	0	3	0	8,796
Hartley	4	0	3	1	14,952
Hutchinson	81	65	8	8	256,497
Moore	49	0	49	0	150,810
Ochiltree	2	0	0	2	10,050
Potter	3	0	2	1	8,079
Sherman	7	0	7	0	20,953
Wheeler	36	20	10	6	88,669
Miscellaneous	11	6	3	2	36,842
Total	305	149	121	35	919,359

TEXAS PANHANDLE

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Collingsworth	1	0	0	1	5,988
Hartley	3	0	0	3	14,083
Potter	1	0	0	1	4,005
Total	5	0	0	5	24,076

SOUTHEAST NEW MEXICO

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	2	0	0	2	3,436
February	4	1	0	3	19,903
March	3	1	0	2	16,143
April	5	0	0	5	14,250
May	4	0	0	4	20,841
June	2	1	0	1	10,657
July	3	0	0	3	10,823
August	2	0	0	2	6,019
September	5	0	0	5	22,064
October	5	1	0	4	21,127
November	2	0	0	2	7,159
December	1	0	0	1	5,762
Total	38	4	0	34	158,181

SOUTHEAST NEW MEXICO

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	30	23	1	6	119,980
February	21	21	0	0	90,459
March	31	22	1	8	109,037
April	16	13	1	2	66,168
May	19	16	0	3	63,257
June	31	25	2	4	120,308
July	18	16	0	2	76,063
August	35	31	1	3	158,702
September	35	34	0	1	155,018
October	38	34	3	1	145,462
November	26	18	5	3	108,154
December	33	29	3	1	154,895
Total	333	282	17	34	1,367,503

SOUTHEAST NEW MEXICO

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	32	23	1	8	123,416
February	25	22	0	3	110,362
March	34	23	1	10	125,180
April	21	13	1	7	80,418
May	23	16	0	7	84,098
June	33	26	2	5	130,965
July	21	16	0	5	86,886
August	37	31	1	5	164,721
September	40	34	0	6	177,082
October	43	35	3	5	166,586
November	28	18	5	5	115,313
December	34	29	3	2	160,657
Total	371	286	17	68	1,525,684

SOUTHEAST NEW MEXICO

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Anderson	2	2	0	0	5,357
Artesia	2	1	0	1	5,775
Lea	12	12	0	0	61,995
Caprock	31	30	0	1	142,329
Cooper-Jal	9	6	2	1	30,266
Drinkard	41	39	0	2	234,796
Drinkard-Yeso	8	8	0	0	51,840
Drinkard —8,300 ft.	4	3	0	1	39,503
Eaves	2	2	0	0	6,248
Empire	8	5	1	2	11,975
Eunice, & S.	5	5	0	0	18,512
Eunice, W.	4	3	0	1	17,803
Forest	3	2	0	1	5,724
Fren	12	12	0	0	25,572
Grayburg-Jackson	30	29	0	1	84,902
Justis	2	0	2	0	9,742
Langlie-Mattix	12	11	1	0	39,546
Loco Hills	8	7	0	1	22,564
Lovington, W.	6	6	0	0	29,942

MACHINE PARTS **BARGAINS**

Bearings—SKF6313 New Departure 1218—1312—5217.
Heavy Duty Steel Gears and Pinions, 2.03:1 and 4.48:1 ratio.
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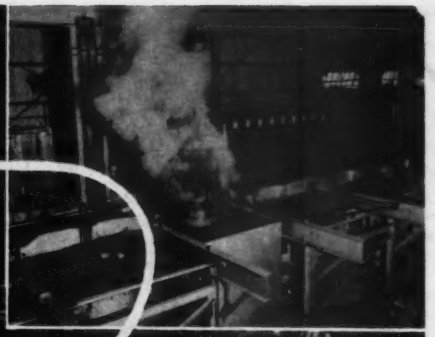

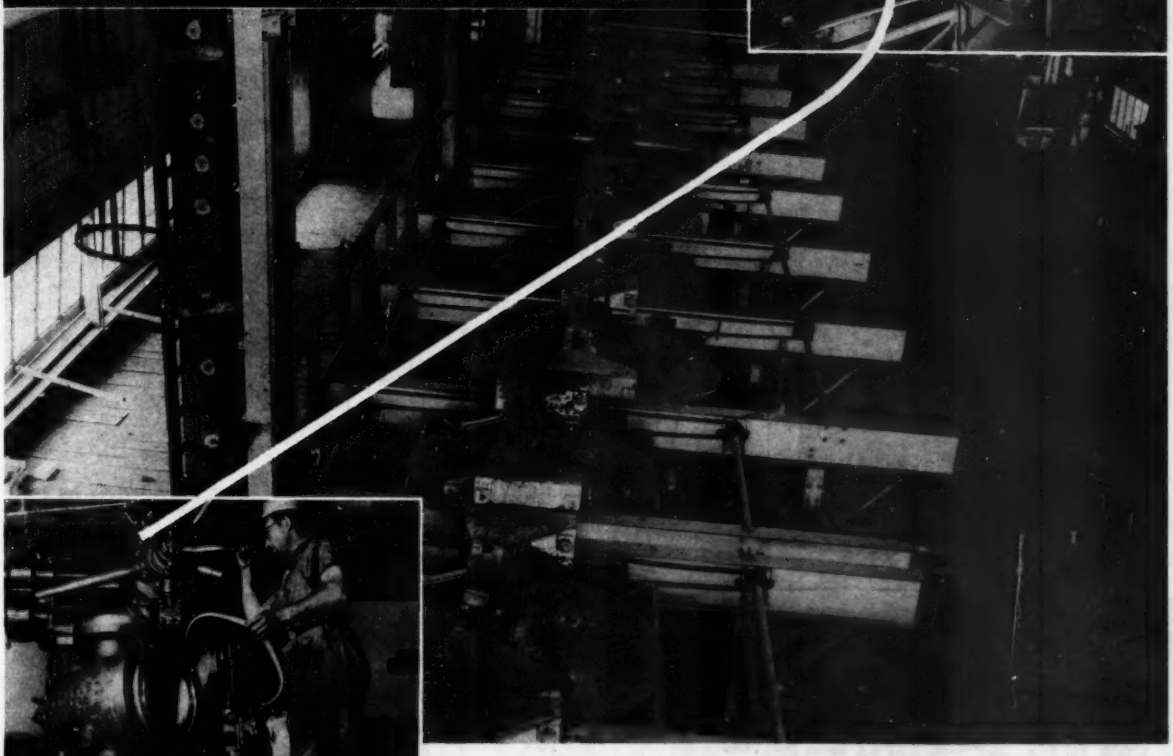

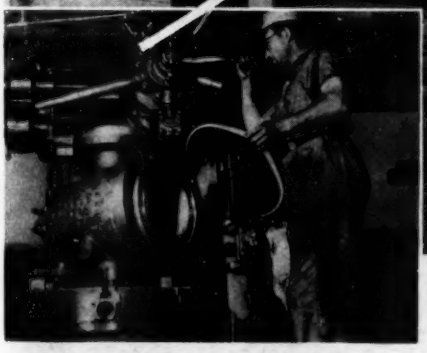

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GOOD CASTINGS TESCO HOUSTON, TEXAS

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T E S C O

BETTER STEEL FOR MODERN INDUSTRY

Field—	Comp.	Oil	Gas	Dry	Footage
Maljamar	5	5	0	0	20,322
Paddock	34	34	0	0	151,727
Penrose-Skelly	10	7	0	3	60,443
Red Lakes	3	3	0	0	5,882
Roberts, W.	11	11	0	0	37,660
Russell	14	8	2	4	11,719
Square Lake	24	22	0	2	100,629
Young	4	3	0	1	15,931
Miscellaneous	27	6	9	12	118,799
Total	333	282	17	34	1,367,503

SOUTHEAST NEW MEXICO

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Chavez	3	0	0	3	17,360
DeBaca	4	0	0	4	14,475
Eddy	9	1	0	8	15,569
Lea	17	3	0	14	89,471
Roosevelt	3	0	0	3	17,870
Miscellaneous	2	0	0	2	3,436
Total	38	4	0	34	158,181

EASTERN TEXAS

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	13	1	0	12	70,015
February	10	0	1	9	72,317
March	10	3	0	7	54,670
April	4	1	0	3	24,407
May	9	1	0	8	46,724
June	10	4	0	6	64,699
July	6	0	0	6	39,803
August	12	1	1	10	51,740
September	14	4	0	10	73,166
October	16	3	2	11	103,517
November	1	0	0	1	5,631
December	9	2	0	7	47,193
Total	114	20	4	90	653,882

EASTERN TEXAS

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	47	26	18	3	269,199
February	36	22	11	3	213,195
March	70	47	14	9	383,883
April	47	41	2	4	240,572
May	58	42	11	5	294,595
June	53	41	8	4	274,937
July	31	18	11	2	164,078
August	77	46	22	9	422,305
September	31	26	3	2	154,225
October	49	21	24	4	303,021
November	37	15	13	9	205,396
December	37	20	8	9	212,240
Total	573	365	145	63	3,137,646

EASTERN TEXAS

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	60	27	18	15	339,214
February	46	22	12	12	285,512
March	80	50	14	16	438,553
April	51	42	2	7	264,979
May	67	43	11	13	341,319
June	63	45	8	10	339,636
July	37	18	11	8	203,881
August	89	47	23	19	474,045
September	45	30	3	12	227,391
October	65	24	26	15	406,538
November	38	15	13	10	211,027
December	46	22	8	16	259,433
Total	687	385	149	153	3,791,528

EASTERN TEXAS

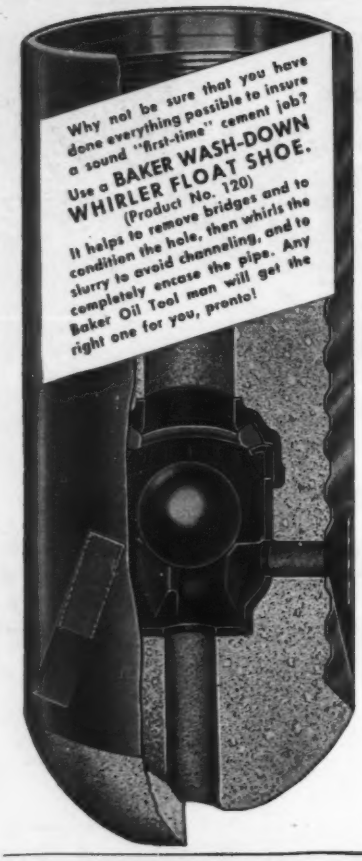
Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Bethany	6	0	6	0	30,920
Calvert	12	7	0	5	26,728
Carthage	122	1	120	1	773,300
Cayuga	2	0	0	2	8,126
East Texas	28	28	0	0	99,560
Grapeland, & W.	3	0	1	2	19,134
Hawkins	155	145	0	10	711,309
Henderson	7	7	0	0	52,741
Jefferson	4	3	0	1	29,287
Long Lake	12	5	3	4	58,547
Lone Star	2	2	0	0	11,777
Manziel	4	4	0	0	25,773
Manziel-Sub-Clarksville	5	4	0	1	20,363
Merigale	17	15	0	2	83,845
Mount Sylvan	4	1	0	3	24,305
Navarro Crossing	2	1	0	1	12,009
New Hope	12	10	0	2	94,320
Opelika	2	0	2	0	19,703
Opelika-Rodessa	6	6	0	0	55,831
Pickton	15	14	0	1	110,965
Pittsburg	2	2	0	0	16,040
Pleasant Grove	2	0	0	2	8,181
Powell	2	2	0	0	4,744
Quitman	9	9	0	0	53,759
Rodessa	2	0	1	1	15,031
Sam Houston	2	1	0	1	8,220
Sand Flat	21	16	0	5	157,610
Smithland	19	19	0	0	45,633
Talco	24	23	0	1	88,948
Tri-Cities	2	1	1	0	15,652
Van Shallow	4	2	0	2	5,295
Waskom	9	5	2	2	56,140
Whelan	5	0	4	1	39,843
Winnsboro	5	5	0	0	41,466
Miscellaneous	45	27	5	13	312,541
Total	573	365	145	63	3,137,646

EASTERN TEXAS

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Anderson	3	0	0	3	24,379
Angelina	3	0	0	3	14,483
Bowie	4	1	0	3	18,417
Cass	3	0	0	3	17,650
Cherokee	8	2	0	6	43,920
Falls	2	0	0	2	9,215
Franklin	2	0	0	2	11,785
Freestone	3	1	0	2	14,390
Harrison	5	1	1	3	30,454
Henderson	3	1	0	2	19,174
Hill	4	0	0	4	3,911
Houston	5	0	0	5	39,409
Hunt	2	0	0	2	8,125
Kaufman	4	0	0	4	18,565
Limestone	6	1	0	5	27,328
Marion	3	2	1	0	25,273
Navarro	8	1	1	6	22,925
Panola	3	1	0	2	20,465
Rains	2	0	0	2	12,434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It helps to remove bridges and to condition the hole, then whirls the slurry to avoid channeling, and to completely encase the pipe. Any Baker Oil Tool man will get the right one for you, pronto!

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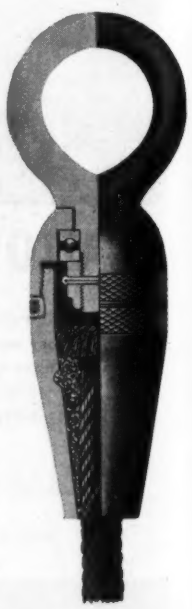

for wire line cat lines. One end of the swivel is designed as a wire line socket for conventional babbiting of the line. The other end has a conventional ring for cordage rope. Many concerns babbit a swivel on each end of a 200' ½" or ⅝" wire line, and plait about 40' of manila rope in the ring for use with the cat head, proving to be much more economical than manila and greatly reducing the amount of cordage required for cat lines.

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Dial 6637
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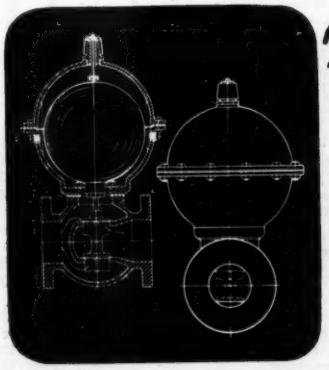
Corpus Christi, Texas



For **STOCK TANK GATHERING LINES**

THE *Davis*
AIR-LOK VALVE

QUICK FACTS . . .

1. AUTOMATIC. Closes line as soon as withdrawal of liquid is completed.
2. PREVENTS TROUBLE. Keeps air or vapor from being drawn into pipe line.
3. SAVES LABOR. Tank gager can cover more area without being concerned about closing off manually operated valves.
4. STOPS PUMP. The pump, whether electric or gas, may be stopped automatically *when the AIR-LOK closes* by installing a cut out unit that breaks the electric circuit or shuts off gas feed line.
5. FIELD TESTED. Popular with users. Ask for literature.

DAVIS REGULATOR COMPANY
2543 S. Washtenaw Ave., Chicago 8, Ill.

DAVIS REGULATOR COMPANY

Distributor: Westcott & Greis, Tulsa, Dallas and Houston

DON'T GET BURNED UP BY NEGLECT

Heat Wears Out Oil Field Engines Fast . . . In gas fueled engines, especially, important top cylinder areas are neglected . . . lubrication is taken for granted. Here at temperatures which break down ordinary lubricants, Marvel Mystery Oil and the Marvel Inverse Oiler *stay* on the job for you. Protection is positive.

Marvel Mystery Oil not only protects with *extra*-tough film strength at high heat, it combines amazing solvent action as well. Sticky gums and varnish are removed from valves, rings and guides . . . the engine *keeps clean* inside.

Wear drops way off and power picks right up when lubrication is right. You'll set a new minimum in "down" time and a new maximum in engine life. Ask for the facts. EMEROL MANUFACTURING CO., Inc., 242 W. 69th St., New York 23, N. Y.

use the
MARVEL
INVERSE OILER WITH MARVEL MYSTERY OIL

The Marvel Inverse Oiler, easily installed, proportions the flow of Marvel Mystery Oil precisely to the needs of your engine.

FITLER LUBRICORE

There is but one genuine "LUBRICORE" Self-Lubricating Rope made and placed on the market by FITLER, patented by FITLER and easily identified as a FITLER product by the Self-Lubricating "Green Yarn Center."

Insist on "LUBRICORE" — Beware of imitations — Don't accept substitutes. Ask for "LUBRICORE," the Self-Lubricating Green Yarn Center Pure Manila Rope made by FITLER.

★

THE EDWIN H. FITLER CO.

PHILADELPHIA, PA.

Manufacturers of Quality Rope Since 1804

County—	Comp.	Oil	Gas	Dry	Footage
Robertson	2	0	0	2	8 655
Rusk	4	1	0	3	19,821
San Augustine	2	0	0	2	15,019
Shelby	2	1	0	1	18,121
Smith	4	1	0	3	37,906
Van Zandt	5	0	0	5	39,295
Walker	2	1	0	1	13,762
Wood	7	3	0	4	43,807
Miscellaneous	13	2	1	10	76,634
Total	114	20	4	90	653,882

NORTH CENTRAL TEXAS

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	25	3	0	22	94,479
February	21	2	0	19	79,222
March	42	4	0	38	128,589
April	33	3	0	30	97,475
May	38	2	0	36	89,859
June	44	1	0	43	103,560
July	37	4	1	32	117,898
August	40	4	0	36	101,267
September	41	8	2	31	124,625
October	38	10	0	28	124,674
November	30	5	0	25	77,321
December	30	3	0	27	86,178
Total	419	49	3	367	1,225,147

NORTH CENTRAL TEXAS

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	156	106	1	49	429,796
February	110	79	0	31	296,490
March	150	99	0	51	386,532
April	133	77	0	56	279,766
May	167	107	0	60	446,629
June	196	125	0	71	437,446
July	142	95	1	46	364,335
August	131	79	0	52	358,024
September	114	79	0	35	289,178
October	129	80	0	49	307,757
November	99	66	2	31	279,325
December	106	80	1	25	279,276
Total	1,633	1,072	5	556	4,154,554

NORTH CENTRAL TEXAS

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	181	109	1	71	524,275
February	131	81	0	50	375,712
March	192	103	0	89	515,121
April	166	80	0	86	377,241
May	205	109	0	96	536,488
June	240	126	0	114	541,006
July	179	99	2	78	482,233
August	171	83	0	88	459,291
September	155	87	2	66	413,803
October	167	90	0	77	432,431
November	129	71	2	56	356,646
December	136	83	1	52	365,454
Total	2,052	1,121	8	923	5,379,701

NORTH CENTRAL TEXAS

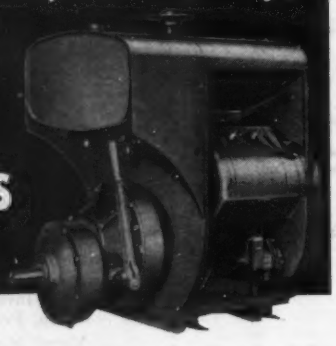
Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Almon	8	6	0	2	27,635
Anarene	3	3	0	0	3,486
Anderson	3	2	0	1	7,682
Antelope	4	4	0	0	12,765
Archer County Regular	12	6	0	6	18,848
Bateman Ranch	8	8	0	0	42,887
Belcherville	8	6	0	2	43,791
Benson	4	4	0	0	11,351
Bowers	9	7	0	2	27,807
Bryan	3	1	0	2	13,243
Bryson	8	4	0	4	33,120
Bulcher	7	7	0	0	13,232
Burk	15	5	0	10	20,495
Burns-Benson	4	4	0	0	17,801
Coleman	3	2	0	1	12,541
Cooper	5	4	0	1	19,754
Cope	3	3	0	0	13,211
Crain	6	3	0	3	30,341
Daume	8	6	0	2	32,927
Dodson	4	4	0	0	24,656
Electra—Shallow	176	116	0	60	257,752
Electra—3,600 ft.	10	6	0	4	23,985
Ellis	14	6	0	8	25,807
Ewalt	4	1	0	3	18,222
Fargo	9	8	0	1	40,562
Garvey	4	2	0	2	13,231
Gatewood	78	73	0	5	127,150
Harrold	8	6	0	2	36,478
Hildreth	33	33	0	0	187,267
Holliday—Shallow	33	24	0	9	86,171
Holliday—4,000 ft.	54	42	0	12	308,125
Hull-Silk	9	7	0	2	31,888
Johnson (Montague)	3	3	0	0	18,390
Johnson (Young)	10	5	0	5	31,003
Joy	17	14	0	3	78,911
KMA	67	43	0	24	128,517
Knox	19	8	0	11	66,466
Lupton	5	4	0	1	20,084
McKnight	5	5	0	0	21,446
McNutt	4	2	0	2	28,110
Madden	29	25	0	4	113,717
Manning-Ellenburger	3	3	0	0	16,307
Markley	7	5	0	2	9,502
Mathis	3	2	0	1	15,081
Morrison	3	2	0	1	10,886
Muenster	15	10	0	5	15,244
National—Canyon	18	17	0	1	66,083
National—Ellenburger	17	14	0	3	84,860
National—Rock Crossing	5	5	0	0	18,463
Nocona	16	11	0	5	14,844
Olney	14	13	0	1	21,520
Portwood	4	2	0	2	5,824
Ringgold	6	4	0	2	34,086
Risch	6	6	0	0	26,815
Rogers	7	5	0	2	35,462
Rose	8	8	0	0	22,242
Ross	13	13	0	0	61,389
Ross Ranch	8	7	0	1	42,511
Sewell	3	0	1	2	9,336
Sivells Bend	23	20	0	3	161,915
Steed-Cooper	3	2	1	0	13,663
Stoneburg	3	3	0	0	18,591
Sunshine Hill	21	13	0	8	26,101
Thomas	20	13	0	7	27,950
Thornberry	15	8	0	7	18,342
Voth	3	2	0	1	6,029
Walnut Bend	7	4	0	3	37,350
West	12	12	0	0	51,276

For Your Tough Power Jobs, Specify

WISCONSIN

HEAVY-DUTY 4 CYL. V-TYPE *Air-Cooled* ENGINES



Here is a 475-lb. power package that delivers 30 hp. at 2000 R.P.M. — designed and built for dependable, heavy-duty service outdoors or indoors. It's the Model VP-4, V-type, 4-cylinder Wisconsin Air-Cooled Power Unit.

Compact V-type design simplifies installation on a great variety of equipment and efficient AIR-COOLING takes care of all cooling problems . . . at any season, in any location.

Heavy-duty engineering features include: Tapered roller main bearings, dynamically balanced crankshaft, mirror-finish crank-pins, honed cylinders, and molybdenum iron valve seat inserts. High tension rotary type outside magneto is equipped with Impulse Coupling for quick, easy starting in any weather.

For utmost dependability . . . specify "Wisconsin Engine". Supplied in a complete power range from 2 to 30 hp., 4-cycle, single cyl. and V-type 4-cyl. models.

WISCONSIN MOTOR Corporation

MILWAUKEE 14, WISCONSIN

World's Largest Builders of Heavy Duty Air Cooled Engines

WRITE TO HARLEY SALES CO.

510 Atlas Building, Tulsa, Oklahoma
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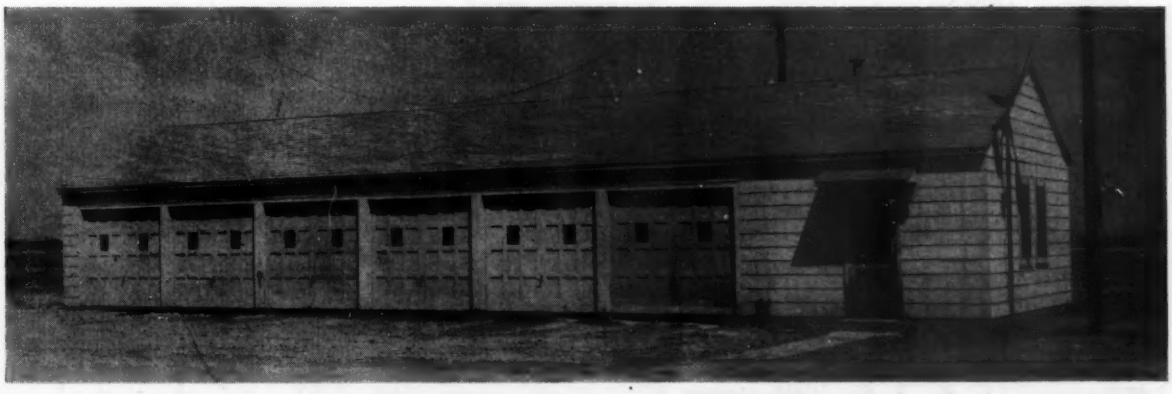
Oil field distributors for Wisconsin Engines and all types of utility units.

ICATED, DEMOUNTABLE HOUSES

for the Oil Industry

This specially constructed STURDYBILT Garage planned to accommodate six cars or trucks shows the flexibility of STURDYBILT design. Similar garages can be erected to accommodate any number of vehicles; and offices or tool houses can be constructed at either end. The floor can be concrete, wood or dirt, and composition or Johns-Manville asbestos shingles can be used on the roof.



MANUFACTURERS OF SPECIAL MILLWORK: DISTRIBUTORS OF JOHNS-MANVILLE INSULATION, ROOFING AND SIDING SHINGLES: CURTIS WOODWORK

STURDYBILT

SOUTHERN MILL & MANUFACTURING CO.

• TULSA, OKLAHOMA •

Prefabricated, Demountable Houses

STURDYBILT HOUSES COMPLY WITH COMMERCIAL STANDARD CS125-45 OF THE NATIONAL BUREAU OF STANDARDS FOR PREFABRICATED HOMES

Field—	Comp.	Oil	Gas	Dry	Footage
Wilson	47	35	0	12	129,678
Wilson-Strawn	16	14	0	2	66,967
Woodbine	4	3	0	1	16,651
Miscellaneous	587	294	3	290	978,731
Total	1,633	1,072	5	556	4,154,554

NORTH CENTRAL TEXAS

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Archer	103	7	0	96	203,702
Baylor	9	0	0	9	23,835
Clay	19	2	0	17	61,690
Cooke	57	5	0	52	147,021
Denton	3	0	0	3	7,538
Foard	3	0	0	3	18,268
Grayson	6	1	1	4	29,108
Haskell	5	0	0	5	19,332
Jack	36	1	2	33	71,292
King	3	0	0	3	20,059
Knox	3	0	0	3	11,955
Montague	33	4	0	29	171,549
Throckmorton	15	4	0	11	51,855
Wichita	49	5	0	44	141,332
Wilbarger	27	6	0	21	111,858
Young	41	11	0	30	123,189
Miscellaneous	7	3	0	4	11,564
Total	419	49	3	367	1,225,147

WEST CENTRAL TEXAS

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	6	0	0	6	16,946
February	10	0	0	10	37,059
March	20	6	0	14	55,679
April	13	2	0	11	40,423
May	15	0	0	15	45,606
June	19	2	1	16	44,661
July	12	1	0	11	38,651
August	24	3	0	21	69,229
September	18	6	0	12	48,002
October	18	4	0	14	53,888
November	18	2	0	16	58,260
December	13	1	0	12	37,839
Total	186	27	1	158	546,245

WEST CENTRAL TEXAS

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	38	23	4	11	89,002
February	20	13	1	6	51,415
March	50	30	4	16	110,483
April	34	20	2	12	77,491
May	42	10	2	30	93,700
June	38	25	4	9	100,324
July	34	17	3	14	95,000
August	57	29	1	27	143,550
September	53	24	5	24	126,318
October	22	16	1	5	62,680
November	44	25	1	18	105,275
December	35	18	1	16	84,135
Total	467	250	29	188	1,319,413

WEST CENTRAL TEXAS

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	44	23	4	17	105,948
February	30	13	1	16	88,474
March	70	36	4	30	166,162
April	47	22	2	23	117,914
May	57	10	2	45	139,308
June	57	27	5	25	144,965
July	46	18	3	25	133,691
August	81	32	1	48	212,779
September	71	30	5	36	174,320
October	40	20	1	19	116,568
November	62	27	1	34	163,535
December	48	19	1	28	121,974
Total	653	277	30	346	1,685,658

WEST CENTRAL TEXAS

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Footage
Avoca	2	2	0	0	3,465
Bluff Creek	6	3	0	3	9,581
Brad	3	0	2	1	10,763
Brown	3	0	2	1	5,150
Brownwood	2	0	1	1	3,137
Buttram	3	0	0	3	8,699
Callahan	2	0	2	0	2,460
Cisco	10	3	3	4	37,354
Coker	3	1	0	2	9,997
Coleman	13	9	1	3	33,267
Cook	9	1	0	8	13,408
Cooper-Roberts	8	7	0	1	18,846
Eastland	8	4	1	3	18,362
Eolian	5	2	0	3	21,114
Hardy	2	1	0	1	5,421
Jones	46	35	0	11	92,788
Lawson	3	0	0	3	10,752
Lewis-Steffens	20	18	0	2	37,957
Loving	3	0	0	3	13,338
Manning-O'Conner	11	9	0	2	39,482
Merkel	5	2	0	3	14,025
Nail	5	4	0	1	7,545
Neianda	5	1	0	4	14,945
Noodle Creek, & S.	13	10	0	3	46,531
Overall	3	2	0	1	7,247
Palo Pinto	5	1	1	3	19,679
Reddin	29	17	0	12	74,910
Santa Anna	16	7	7	2	32,576
Shackelford	55	32	0	23	67,855
Silver Valley	7	2	0	5	25,195
Stephens	20	12	3	5	77,153
Taylor	2	0	0	2	6,030
Wild	2	1	0	1	8,897
Wimberly	5	3	0	2	12,672
Miscellaneous	133	61	6	66	323,812
Total	467	250	29	188	1,139,413

WEST CENTRAL TEXAS

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Brown	6	1	0	5	9,178
Callahan	15	0	0	15	28,428
Coleman	21	3	1	17	52,442
Eastland	7	2	0	5	17,336
Erath	3	0	0	3	13,132
Fisher	3	0	0	3	13,954
Haskell	3	0	0	3	12,429
Jones	54	6	0	48	154,823
Palo Pinto	7	2	0	5	22,815
Shackelford	27	7	0	20	79,573
Stephens	10	1	0	9	41,815
Taylor	27	5	0	22	79,184
Miscellaneous	3	0	0	3	21,136
Total	186	27	1	158	546,245

SOUTHWEST TEXAS

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	15	2	2	11	48,193
February	13	2	0	11	49,224
March	22	3	0	19	58,963
April	23	2	1	20	83,575
May	17	0	1	16	63,616
June	38	4	1	33	115,310
July	27	3	1	23	86,662
August	28	5	2	21	88,684
September	20	0	1	19	62,913
October	10	1	0	9	29,130
November	28	0	0	28	95,441
December	27	1	1	25	77,416
Total	268	23	10	235	859,127

SOUTHWEST TEXAS

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	19	12	4	3	71,013
February	27	19	3	5	95,987
March	35	19	2	14	129,318
April	31	25	0	6	120,884
May	23	13	2	8	93,538
June	26	15	1	10	102,527
July	27	11	2	14	113,750
August	32	17	3	12	134,470
September	18	11	0	7	64,596
October	30	16	5	9	104,240
November	38	25	1	12	148,117
December	29	20	3	6	100,446
Total	335	203	26	106	1,278,886

SOUTHWEST TEXAS

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	34	14	6	14	119,206
February	40	21	3	16	145,211
March	57	22	2	33	188,281
April	54	27	1	26	204,459
May	40	13	3	24	157,154
June	64	19	2	43	217,837
July	54	14	3	37	200,412
August	60	22	5	33	223,154
September	38	11	1	26	127,509
October	40	17	5	18	133,370
November	66	25	1	40	243,558
December	56	21	4	31	177,862
Total	603	226	36	341	2,138,013

SOUTH CENTRAL TEXAS

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Calliham	2	1	0	1	13
Charlotte	19	13	2	4	969
Gas Ridge	13	10	0	3	27
Imogene	8	6	0	2	316
Jourdanton	6	6	0	0	534
Leona River	2	1	0	1	17
Luling	3	3	0	0	73
Minerva-Rockdale	3	3	0	0	6
Muil	2	1	0	1	97
Pearsall	7	6	0	1	371
South Campana	5	5	0	0	406
Weigang (Fashing)	7	6	0	1	833
Miscellaneous	12	4	0	8	157
Total	89	65	2	22	3,819

SOUTH TEXAS

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Agua Prieta	11	3	3	5	211
Aviators	33	24	0	9	782
Benavides	2	1	0	1	132
Boyle	6	3	1	2	157
Cadena	9	2	1	6	81
Cameron	9	7	1	1	986
Dulup	3	1	0	2	40
East Charco Redondo	2	1	0	1	58
East Longhorn	3	3	0	0	202
Garcia	6	2	0	4	163
Guerra	2	1	0	1	99
Herbst	2	2	0	0	121
Holland (Cortez)	3	1	0	2	52
Hughes	4	3	0	1	218
Kohler	2	1	1	0	20
LaReforma	3	1	1	1	51
L fevre	3	3	0	0	72
Lockhart (Ira)	4	3	0	1	137
McLean	2	2	0	0	127
North Albercas	8	3	0	5	220
North Government Wells	4	4	0	0	10
North Rincon	4	2	1	1	235
North Sun	3	3	0	0	332
Peters	3	1	0	2	92
Piedras Pintas	25	14	2	9	4,786
Rincon	12	7	1	4	513
Robinson	3	3	0	0	181
Ross	8	6	1	1	303
Sejita	13	12	0	1	935
Southland	9	7	1	1	593
South Government Wells	3	1	0	2	19
South Rincon	3	0	1	2	0
Sun	4	3	0	1	206
Thomas-Lockhart	3	2	0	1	121
Welder	2	1	1	0	28
Yturria	2	1	0	1	10
Miscellaneous	28	4	8	16	232
Total	246	138	24	84	12,525

SOUTH CENTRAL TEXAS

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Atascosa	12	4	1	7	78,582
Bastrop	7	0	0	7	16,601
Bexar	16	1	0	15	20,830
Caldwell	8	0	0	8	16,725
Dimmit	6	1	0	5	23,444
Edwards	2	0	0	2	5,553
Frio	3	0	1	2	11,689
Gonzales	4	0	0	4	33,334
Guadalupe	7	1	0	6	16,161
Lee	3	0	0	3	27,258
Maverick	2	0	0	2	9,020
McMullen	14	1	1	12	32,591
Medina	7	0	0	7	12,253
Milam	11	2	0	9	20,244

County—	Comp.	Oil	Gas	Dry	Footage
Travis	5	0	0	5	4,951
Williamson	5	0	0	5	6,135
Zavala	4	0	0	4	13,892
Miscellaneous	3	1	0	2	11,732
Total	119	11	3	105	360,995

SOUTH TEXAS

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Duval	47	2	3	42	181,109
Jim Hogg	12	0	0	12	55,719
Starr	27	8	1	18	108,593
Webb	45	2	3	40	114,972
Zapata	18	0	0	18	37,739
Total	149	12	7	130	498,132

TEXAS GULF

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	26	1	0	25	181,800
February	29	4	2	23	222,378
March	39	15	0	24	295,974
April	23	8	2	13	178,607
May	38	11	0	27	280,977
June	37	4	2	31	226,934
July	17	1	1	15	131,628
August	34	10	1	23	258,758
September	26	8	2	16	193,832
October	38	5	2	31	273,529
November	34	5	2	27	248,528
December	34	7	1	26	253,504
Total	375	79	15	281	2,746,449

TEXAS GULF

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	108	84	0	24	725,738
February	112	83	9	20	743,762
March	126	96	11	19	796,001
April	108	81	16	11	723,014
May	115	87	7	21	760,002
June	122	96	14	12	817,600
July	119	89	14	16	771,911
August	110	84	13	13	736,050
September	102	80	6	16	667,411
October	97	70	14	13	608,439
November	131	102	14	15	875,690
December	94	69	4	21	626,766
Total	1,344	1,021	122	201	8,852,384

TEXAS GULF

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	134	85	0	49	907,538
February	141	87	11	43	966,140
March	165	111	11	43	1,091,975
April	131	89	18	24	901,621
May	153	98	7	48	1,040,979
June	159	100	16	43	1,044,534
July	136	90	15	31	903,539
August	144	94	14	36	994,808
September	128	88	8	32	861,243
October	135	75	16	44	881,968
November	165	107	16	42	1,124,218
December	128	76	5	47	880,270
Total	1,719	1,100	137	482	11,598,833

UPPER GULF COAST TEXAS

Development Completions by Fields

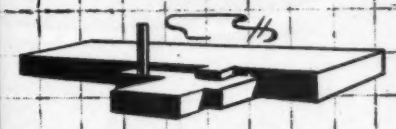
Field—	Comp.	Oil	Gas	Dry	Prod.
Altair	4	3	0	1	1,102
Arnim	6	4	0	2	157
Bammel	2	1	1	0	300
Barbers Hill	2	1	0	1	23
Big Creek	3	0	0	3	0
Blue Lake	8	4	1	3	705
Blue Ridge	3	2	0	1	217
Boling	8	4	0	4	411
Cedar Bayou	3	1	0	2	140
Cedar Point	9	7	0	2	865
Chocolate Bayou	13	10	0	3	1,814
Clam Lake	2	1	0	1	117
Cold Spring	8	8	0	0	909
Daboval	4	3	1	0	57
Danbury	14	10	1	3	2,440
Dyersdale	6	4	2	0	270
East Bernard	2	0	1	1	0
East Mauritz	2	1	0	1	94
El Campo	5	4	0	1	551

Field—	Comp.	Oil	Gas	Dry	Prod.
Esperson Dome	9	6	0	3	674
Fannett	20	15	1	4	4,033
Fig Ridge	2	1	1	0	250
Francitas	3	2	0	1	199
Gilbert Ranch	2	0	2	0	0
Goose Creek	3	3	0	0	175
Hamel	5	4	0	1	795
High Island	9	8	0	1	1,575
Hillje	2	1	0	1	136
Hitchcock	3	2	0	1	257
Hull	5	3	0	2	148
Humble	11	3	0	8	106
Hutchins	2	2	0	0	239
Jackson Pastures	2	1	0	1	62
Katy	2	1	0	1	110
Kirby	3	2	0	1	323
Kubella	3	1	0	2	72
Lakeview	6	2	4	0	172
Lane City	7	6	0	1	703
Livingston	30	24	0	6	3,806

Field—	Comp.	Oil	Gas	Dry	Prod.
Lolita	7	7	0	0	306
Lovell Lake	6	5	1	0	422
Markham	8	3	0	5	243
Mayo	3	2	1	0	160
McCoy	5	2	0	3	299
Midfields	4	4	0	0	598
Nash Dome	3	2	0	1	199
Needville	8	3	4	1	378
N. Katy	12	10	0	2	625
N. Stowell	5	3	1	1	325
N. Thompson	21	18	0	3	3,970
N. Withers	2	2	0	0	253
Old Ocean	4	4	0	0	1,150
Olive	3	3	0	0	573
Pierce Junction	4	3	0	1	388
Pledger	3	0	3	0	0
Provident City	3	3	0	0	179
Ramsey	2	1	0	1	121
Red Fish Reef	7	6	0	1	674
Saratoga	8	5	0	3	706

STEEL

for PRODUCTION
MAINTENANCE
REPAIR



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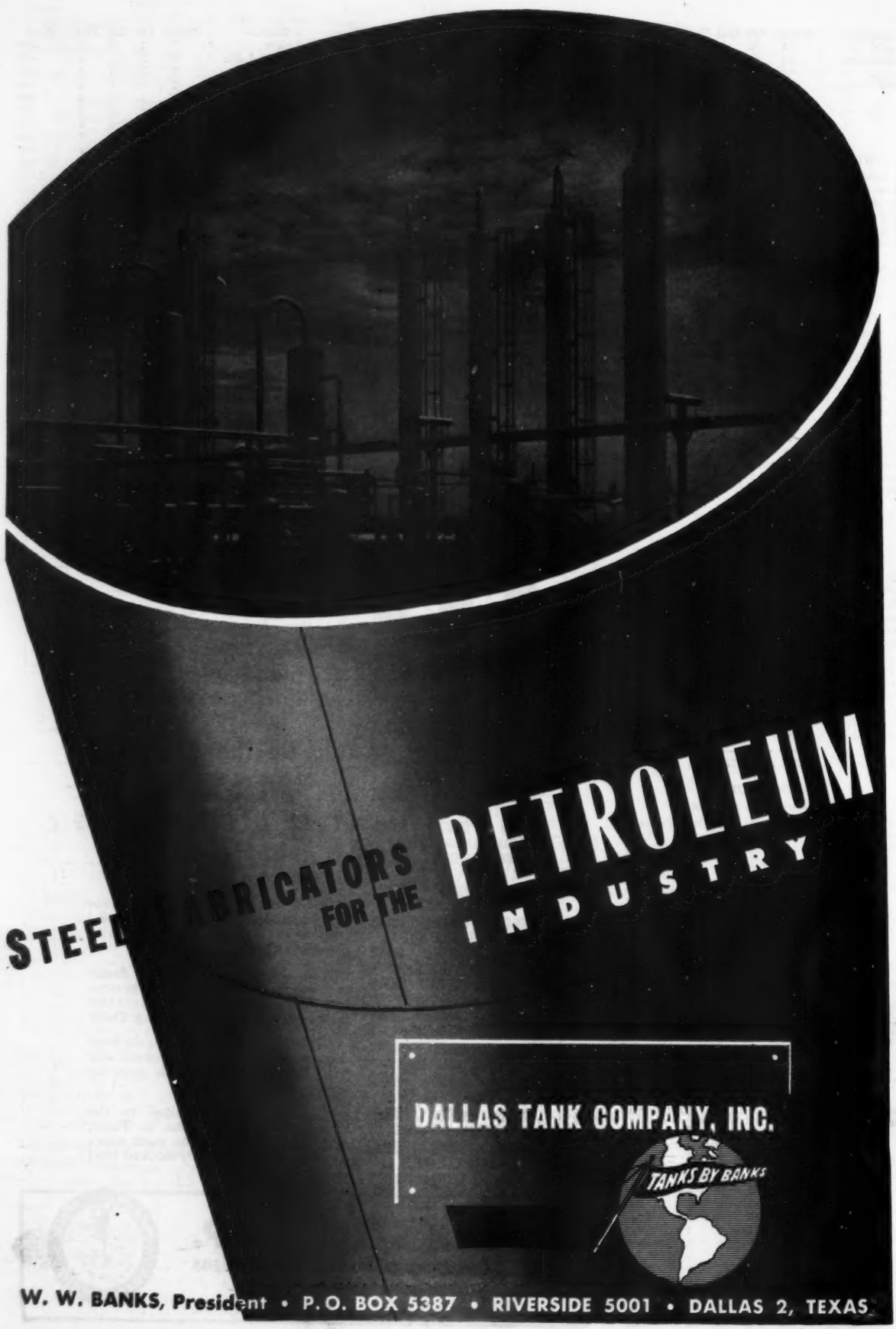
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DALLAS TANK COMPANY, INC.
TANKS BY BANKS
W. W. BANKS, President • P. O. BOX 5387 • RIVERSIDE 5001 • DALLAS 2, TEXAS

Field—	Comp.	Oil	Gas	Dry	Prod.
Satsuma	3	3	0	0	565
Sheridan	2	2	0	0	426
Silsbee	9	8	0	1	918
Smith Point	2	1	0	1	205
Sour Lake	20	13	1	6	1,335
South Mayes	2	2	0	0	70
Southeast Fannett	3	1	0	2	213
South Hillje	7	6	0	1	171
South Liberty	6	5	0	1	225
Spring	2	1	0	1	66
Stowell	2	0	0	2	0
Sugar Valley	24	23	0	1	4,978
Texana	3	1	2	0	11
Village Mills	2	2	0	0	212
West Columbia	9	5	0	4	752
West Ganado	17	16	0	1	1,410
West Ranch	23	21	1	1	2,097
West Silsbee	2	2	0	0	208
Miscellaneous	47	18	8	21	1,714
Total	536	371	37	128	51,244

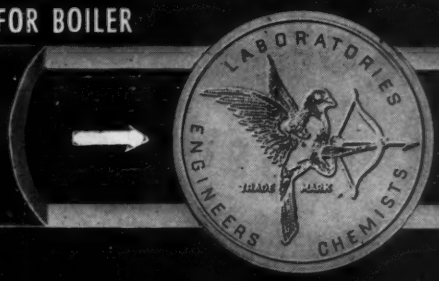
LOWER GULF COAST TEXAS

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Agua Dulce	32	25	6	1	3,775
Albert West	2	1	1	0	42
Bentonville	3	0	3	0	0
Blanconia	6	0	5	1	0
Blucher	6	4	2	0	608
Bonnie View	25	25	0	0	1,958
Borregas	3	1	2	0	138
Boyce	9	8	0	1	625
Brayton	9	8	1	0	961
Burnell-Wilcox	14	10	1	3	691
Cabeza Creek	4	4	0	0	712
Coletto Creek	4	3	0	1	195
East Telferner	2	1	0	1	55
East White Point	5	3	1	1	315
Falls City	43	42	0	1	5,446
Gaffney	4	2	1	1	121
Greta	6	6	0	0	392
Gyp Hill	3	1	0	2	124
Hinnant	4	2	1	1	355
Hysaw	5	4	0	1	309
Kelsey (Deep)	23	23	0	0	3,928
Kittie West	2	1	1	0	67
La Gloria	37	24	11	2	3,491
Los Indios	3	0	2	1	0
Mariposa	5	4	0	1	218
McFaddin	5	2	2	1	185
Midway	3	2	0	1	268
North La Rosa	3	1	1	1	63
North Magnolia City	3	3	0	0	534
N. Minnie Bock	2	1	1	0	121
North Pettus-Wilcox	5	5	0	0	594
Odem	11	11	0	0	849
Pita	3	3	0	0	170
Poehler	5	5	0	0	613
Pridham Lake	6	6	0	0	391
Rachal	3	2	0	1	97
Refugio (Old)	2	2	0	0	105
Refugio-Fox	8	3	3	2	279
Refugio-Heard	32	25	7	0	2,761
Reynolds	2	2	0	0	160
Richard King	6	5	0	1	306
Riverside	4	4	0	0	293
Saxet	18	16	1	1	3,503
Scott & Hopper	6	3	0	3	150
Seeligson	79	76	1	2	16,192
Sheriff	21	20	0	1	2,435
S.W. Burnell	14	10	1	3	774
S. Cabeza Creek	6	5	1	0	300
South Caesar	4	3	1	0	324
South Tulsita-Wilcox	12	12	0	0	1,438
Stratton	27	20	4	3	2,544
Theis	6	2	0	4	178
Tijerina-Canales	48	47	1	0	9,359
Tom O'Connor	60	58	1	1	9,524
Tulsita-Wilcox	2	2	0	0	399
Tynan	2	1	1	0	30
West Magnolia City	4	0	1	3	0
West Pridham Lake	8	8	0	0	643
West Sinton	4	1	2	1	159
Willamar	60	59	1	0	9,158
Willmann	2	2	0	0	146
Woodsboro	2	2	0	0	51
Yougeen	10	7	3	0	413
Miscellaneous	51	12	14	25	1,085
Total	808	650	85	73	91,120

INDUSTRIAL WATER CONDITIONING

FOR BOILER AND PROCESS



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UPPER GULF COAST TEXAS
Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Austin	2	0	0	2	20,753
Brazoria	12	5	1	6	97,411
Chambers	25	4	1	20	212,838
Colorado	2	1	0	1	21,817
Fayette	3	0	0	3	12,014
Fort Bend	20	2	0	18	141,696
Grimes	2	0	0	2	12,121
Hardin	7	2	0	5	59,087
Harris	28	1	1	26	212,301
Jackson	18	0	1	17	119,086
Jefferson	12	2	1	9	114,416
Liberty	9	6	0	3	61,317
Matagorda	20	11	0	9	197,760
Montgomery	11	0	0	11	82,403
Newton	3	0	0	3	30,233
San Jacinto	2	1	0	1	19,506
Trinity	3	1	0	2	29,255
Waller	2	0	0	2	17,270
Wharton	20	3	2	15	123,063
Miscellaneous	6	3	0	3	49,208
Total	207	42	7	158	1,633,555

LOWER GULF COAST TEXAS
Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Bee	22	5	1	16	121,918
Brooks	15	3	0	12	102,366
Calhoun	3	0	0	3	20,242
DeWitt	3	1	0	2	29,474
Goliad	7	3	1	3	58,078
Hidalgo	5	2	0	3	37,441
Jim Wells	11	2	1	8	75,602
Karnes	10	1	0	9	62,211
Kleberg	6	1	0	5	51,371
Live Oak	23	4	0	19	94,450
Nueces	18	4	3	11	140,385
Refugio	6	1	1	4	40,365
San Patricio	19	6	0	13	116,802
Victoria	8	1	0	7	46,021
Willacy	9	2	1	6	95,164
Miscellaneous	3	1	0	2	21,004
Total	168	37	8	123	1,112,894

SOUTH LOUISIANA
Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	10	7	0	3	109,769
February	6	4	0	2	63,967
March	18	5	1	12	181,621
April	21	8	2	11	212,792
May	3	1	0	2	28,306
June	10	4	0	6	108,739
July	12	4	0	8	118,000
August	14	6	1	7	159,687
September	14	4	0	10	138,117
October	11	2	0	9	108,993
November	13	5	0	8	137,700
December	8	2	0	6	75,861
Total	140	52	4	84	1,443,552

SOUTH LOUISIANA
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	35	28	2	5	302,782
February	35	29	1	5	321,696
March	50	31	0	19	414,893
April	22	15	0	7	198,495
May	44	33	1	10	378,685
June	42	26	0	16	375,581
July	26	18	1	7	219,477
August	37	18	1	18	297,935
September	22	16	1	5	198,218
October	36	28	1	7	306,062
November	60	42	0	18	507,771
December	35	27	1	7	323,994
Total	444	311	9	124	3,845,589

SOUTH LOUISIANA
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	45	35	2	8	412,551
February	41	33	1	7	385,663
March	68	36	1	31	596,514
April	43	23	2	18	411,287
May	47	34	1	12	406,991
June	52	30	0	22	484,320
July	38	22	1	15	337,477
August	51	24	2	25	457,632

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(2) Dayton-Dowd — 650 GPM — 125′ head with 30 HP 3/220/60 G.E. Motor

(1) Dayton-Dowd — 800 GPM — 250′ head with 90 HP Curtis Turbine 125 lb. pressure — non-condensing — 2500 RPM

(1) Dayton-Dowd — 800 GPM — 250′ head with 75 HP 3/220/60 GE Motor

(1) Worthington — 1200 GPM — 5″ discharge with 25 HP 3/220/60 G.E. Motor

(1) Worthington — 500 GPM — 400′ head with 75 HP 3/220/60 G.E. Motor

(1) DeLaval — 2″ suction — 1¼″ discharge with 3 HP 3/60/220/440 G.E. Motor

STEAM PUMPS

WORTHINGTON

(3)	14x8½x12	Duplex
(1)	12x12x12	Duplex
(3)	10x10½x12	Duplex
(1)	14x14x12	Duplex
(1)	14x7½x12	Duplex
(1)	7½x8½x6	Duplex
(2)	5¼x4¾x5	Duplex
(1)	9x5¼x10	Duplex
(1)	10x10¼x12	Duplex
(1)	10x12x8	Duplex
(1)	10x12x12	Duplex

WAGNER

(2) 7x6x6

SMITH VAILE

(2) 10x6x12

BOOSTERS

(2) Roots-Connersville — 750 MCF/HR — 443 RPM — 10 P.S.I. — 24″ suction, 20″ discharge — direct driven by 600 HP 3/60/2300 440 RPM G.E. Motor with control

(1) Roots-Connersville — 750 MCF/HR — 10 P.S.I. — 36″ suction and discharge — direct driven by 675 HP single cyl. horizontal Ames Uniflow Engine

(1) Roots — 640 MCF/HR — 36″ suction and discharge — direct driven by Ames 118 HP single cyl. Uniflow Engine

(1) G.E. — 500 MCF/HR — single suction volute, geared centrifugal exhauster — Type FS — 365-6500 RPM — driven by G.E. 200 HP 1735 RPM 3/60/2300 Motor with control.

BLOWERS

(2) Sturtevant — double suction — single discharge — Size 10 — Type DES-4 — driven by 185 HP 1700 RPM 125 lb. non-condensing steam turbine

(3) Sturtevant — double suction — single discharge — Size 10 — Type DES-4 — driven by 250 HP — 1750 RPM 3/60/2200 G.E. Motor with control

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(1) 15 KW 230 volt AC-DC M.G. set

(2) 3000 lb. electric monorail telpher carriages with hoisting equipment

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Tel. Ga. 1181 **New Orleans, La.**

Month—	Comp.	Oil	Gas	Dry	Footage
September	36	20	1	15	336,335
October	47	30	1	16	415,055
November	73	47	0	26	645,471
December	43	29	1	13	399,855
Total	584	363	13	208	5,289,141

SOUTH LOUISIANA

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Anse La Butte	7	4	0	3	403
Avery Island	4	3	0	1	1,059
Barataria	3	0	0	3	0
Bastian Bay	2	2	0	0	225
Bayou Blue	6	2	0	4	115
Bayou Carlin	4	2	0	2	656
Bayou La Fleur	5	4	0	1	970
Bayou Des Glaise	3	1	0	2	374
Bayou Mallet	5	4	0	1	381
Bayou Perot	7	5	0	2	1,209
Bayou Sale	11	10	0	1	2,025
Bay St. Elaine	4	4	0	0	589
Black Bayou	6	6	0	0	1,701
Bon Air	7	4	0	3	850
Caillou Island	5	4	1	0	804
Chacahoula	2	1	0	1	173
Charenton	10	8	0	2	1,300
Crowley	2	1	0	1	8
Delta Duck	3	1	0	2	130
Delta Farms	18	17	0	1	3,741
E. Hackberry	11	9	0	2	2,013
E. White Lake	2	2	0	0	359
Egan	22	19	0	3	4,409
Erath	5	5	0	0	1,617
Fausse Point	3	2	0	1	416
Golden Meadow	24	19	0	5	1,559
Good Hope	10	8	0	2	2,918
Grand Bay	5	4	0	1	1,150
Horseshoe Bayou	3	3	0	0	738
Iowa	8	6	1	1	1,614
Krotz Springs	2	2	0	0	265
Lafitte	3	3	0	0	718
Lake Chicot	4	4	0	0	1,425
Lake Pelto	3	1	0	2	259
La Pice	7	4	0	3	827
La Place	2	1	0	1	263
Lirette	5	4	0	1	353
Mamou	13	12	0	1	1,930
Napoleonville	6	0	0	6	0
North Cankton	5	0	1	4	0
North Richie	4	4	0	0	775
North Tepetate	4	3	0	1	319
Oretta	3	2	0	1	202
Plumb Bob	3	2	1	0	362
Port Barre	6	4	1	1	1,012
Potash	2	1	0	1	122
Quarantine Bay	7	6	0	1	1,672
Reddell	3	3	0	0	616
Richie	2	2	0	0	213
St. Martinville	8	4	0	4	484
Shuteston	4	4	0	0	480
South Elton	2	0	0	2	0
S. Jeanerette	3	0	0	3	0
Sulphur Mines	6	4	1	1	575
Tepetate	4	4	0	0	414
University	5	4	1	0	677
Vacherie	3	1	0	2	146
Venice	5	5	0	0	1,242
Vinton	22	20	0	2	3,278
W. Bay	4	4	0	0	1,299
W. Cote Blanche Bay	3	2	0	1	563
W. Gueydan	4	3	0	1	477
W. Hackberry	2	2	0	0	360
W. Lake Verret	4	1	0	3	210
W. Tepetate	13	11	0	2	2,301
White Castle	5	4	0	1	444
Miscellaneous	56	20	2	34	3,016
Total	444	311	9	124	60,825

SOUTH LOUISIANA

Wildcat Completions by Parishes

Parish—	Comp.	Oil	Gas	Dry	Footage
Acadia	11	4	1	6	115,455
Allen	2	2	0	0	20,765
Assumption	4	0	0	4	45,965
Beauregard	9	5	0	4	86,489
Calcasieu	8	3	0	5	70,077
Cameron	13	4	0	9	126,563
E. Baton Rouge	2	0	0	2	20,686
Evangeline	4	2	0	2	42,703
Iberia	8	5	0	3	93,079
Iberville	5	2	0	3	47,114
Jefferson	5	3	0	2	58,511
Jefferson Davis	7	2	0	5	65,915
Lafayette	2	1	0	1	21,601
LaFourche	4	1	0	3	40,311
Orleans	1	0	0	1	10,073
Plaquemines	9	5	0	4	105,788
St. Bernard	3	0	0	3	33,823
St. Charles	6	2	0	4	60,540
St. James	3	2	0	1	28,116
St. Landry	5	2	2	1	51,688
St. Martin	2	1	0	1	23,208
St. Mary	9	2	1	6	77,830
Terrebonne	8	3	0	5	89,458
Vermilion	3	0	0	3	23,341
Miscellaneous	7	1	0	6	84,453
Total	140	52	4	84	1,443,552

NORTH LOUISIANA

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	8	2	0	6	46,926
February	9	0	0	9	61,471
March	10	0	0	10	53,709
April	7	1	0	6	40,220
May	13	2	0	11	76,558
June	5	1	0	4	22,416
July	7	0	0	7	43,183
August	18	2	2	14	86,190
September	11	0	0	11	54,724
October	11	1	0	10	57,079
November	7	0	0	7	38,601
December	8	0	1	7	37,068
Total	114	9	3	102	618,145

NORTH LOUISIANA

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	43	30	7	6	176,743
February	40	27	3	10	171,413
March	58	34	17	7	283,502
April	42	30	6	6	183,288
May	67	44	7	16	259,372
June	51	36	6	9	187,842
July	48	31	6	11	181,465
August	68	44	11	13	234,195
September	62	42	9	11	202,515
October	80	43	11	26	240,128
November	72	47	8	17	258,460
December	55	33	8	14	178,376
Total	686	441	99	*146	2,557,299

*Incl. 1 service well.

NORTH LOUISIANA

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	51	32	7	12	223,669
February	49	27	3	19	232,884
March	68	34	17	17	337,211
April	49	31	6	12	223,508
May	80	46	7	27	335,930
June	56	37	6	13	210,258
July	55	31	6	18	224,648
August	86	46	13	27	320,385
September	73	42	9	22	257,239
October	91	44	11	36	297,207
November	79	47	8	24	297,061
December	63	33	9	21	215,444
Total	800	450	102	*248	3,175,444

*Incl. 1 service well.

NORTH LOUISIANA

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Ashland	9	3	0	6	418
Athens	2	0	2	0	0
Bear Creek	4	0	2	2	0
Bellevue	16	4	2	10	16
Benton	9	6	0	*3	1,747
Big Creek	164	123	11	30	28,316
Caddo	124	107	1	16	3,706
Delhi	102	88	1	13	20,224
De Soto-Red River	14	3	0	11	66
Haynesville & East	20	14	1	5	3,130
Holly	17	7	0	10	1,121
Lake St. John	44	41	1	2	10,138
Lisbon	11	4	6	1	742
Longwood	5	2	3	0	63
Lucky	9	0	9	0	0
Monroe	43	0	43	0	0
Shongaloo, North	8	6	0	2	940
Vixen	2	0	2	0	0
Zwolle	18	6	0	12	1,299
Miscellaneous	65	27	15	23	1,676
Wildcats	114	9	3	102	1,412
Total	800	450	102	*248	75,014

*Incl. 1 service well.

NORTH LOUISIANA

Wildcat Completions by Parishes

Parish—	Comp.	Oil	Gas	Dry	Footage
Bienville	4	0	0	4	21,634
Bossier	7	1	0	6	39,519
Caddo	7	1	0	6	39,384
Claiborne	2	1	0	1	16,496
Concordia	2	0	0	2	27,161
De Soto	3	0	1	2	11,329
Franklin	11	1	1	9	63,151
Grant	2	1	0	1	13,658
La Salle	3	0	0	3	18,958
Madison	10	0	0	10	56,076
Morehouse	3	0	0	3	14,025
Natchitoches	4	1	0	3	21,681
Ouachita	3	0	0	3	15,994
Red River	5	1	0	4	19,560
Richland	24	0	1	23	96,446
Sabine	8	1	0	7	49,241
Tensas	4	0	0	4	34,989
Winn	2	0	0	2	16,694
Miscellaneous	10	1	0	9	52,149
Total	114	9	3	102	618,145

ARKANSAS

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	1	0	0	1	3,051
February	5	2	0	3	20,470
March	3	0	0	3	7,241
April	0	0	0	0	0
May	6	1	0	5	24,472
June	5	0	0	5	12,697
July	5	1	0	4	23,074
August	6	1	0	5	24,926
September	5	1	0	4	22,614
October	3	1	0	2	12,838
November	5	1	0	4	21,161
December	6	1	0	5	22,240
Total	50	9	0	41	194,784

ARKANSAS

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	8	5	0	3	36,960
February	12	10	0	2	52,536
March	11	7	0	4	35,959
April	18	14	0	4	75,335
May	9	9	0	0	39,189
June	12	11	0	1	40,636
July	7	5	1	1	31,585
August	10	9	0	1	41,775
September	12	6	1	5	52,124
October	13	8	0	5	47,255
November	10	8	0	2	31,056
December	11	9	0	2	49,070
Total	133	101	2	30	533,480

ARKANSAS

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	9	5	0	4	40,011
February	17	12	0	5	73,006
March	14	7	0	7	43,200
April	18	14	0	4	75,335
May	15	10	0	5	63,661
June	17	11	0	6	53,333
July	12	6	1	5	54,659
August	16	10	0	6	66,701
September	17	7	1	9	74,738
October	16	9	0	7	60,093
November	15	9	0	6	52,217
December	17	10	0	7	71,310
Total	183	110	2	71	728,264

ARKANSAS

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Atlanta	2	2	0	0	225
Champagnolle	5	3	0	2	103
Fouke	3	1	0	2	72

Field—	Comp.	Oil	Gas	Dry	Prod.
Gum Creek	13	9	0	4	633
Hillsboro	2	2	0	0	42
McKamie	4	3	0	1	934
Smackover	4	3	0	1	85
Spirit Lake	4	3	0	1	635
Stephens	23	17	1	5	1,073
Village	12	11	0	1	1,701
Wesson	44	38	0	6	5,113
Miscellaneous	17	9	1	7	649
Wildcats	50	9	0	41	1,120
Total	183	110	2	71	12,385

ARKANSAS

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Calhoun	2	0	0	2	5,862
Columbia	4	3	0	1	21,441
Lafayette	4	1	0	3	16,438
Little River	3	0	0	3	10,880
Nevada	4	1	0	3	17,775
Ouachita	18	3	0	15	59,778
Union	4	1	0	3	18,503
Miscellaneous	11	0	0	11	44,107
Total	50	9	0	41	194,784

MISSISSIPPI

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	5	0	0	5	37,624
February	5	1	0	4	40,330
March	11	0	1	10	72,519
April	2	0	0	2	19,014
May	4	0	0	4	26,446
June	11	0	0	11	75,386
July	3	0	0	3	19,805
August	5	0	0	5	30,648
September	6	0	0	6	43,298
October	5	0	0	5	32,825
November	7	0	0	7	47,753
December	15	1	0	14	110,767
Total	79	2	1	76	557,293

MISSISSIPPI

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	13	11	0	2	95,645
February	9	9	0	0	70,216
March	17	15	0	2	128,869
April	13	12	0	1	99,359
May	18	14	1	3	127,081
June	16	15	0	1	131,308
July	11	5	1	5	81,683
August	8	8	0	0	70,417
September	16	12	1	3	116,234
October	17	14	0	3	136,949
November	21	18	1	2	181,297
December	22	19	1	2	174,731
Total	181	152	5	24	1,413,779

MISSISSIPPI

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	18	11	0	7	133,269
February	14	10	0	4	110,546
March	28	15	1	12	201,388
April	15	12	0	3	118,373
May	22	14	1	7	153,527
June	27	15	0	12	206,694
July	14	5	1	8	101,488
August	13	8	0	5	101,065
September	22	12	1	9	159,532
October	22	14	0	8	169,774
November	28	18	1	9	229,050
December	37	20	1	16	285,498
Total	260	154	6	100	1,971,072

MISSISSIPPI

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Baxterville	23	22	0	1	8,684
Brookhaven	22	19	0	3	8,010
Cranfield	38	31	1	6	7,621
Eucutta	19	17	0	2	1,723
Fayette	12	6	2	4	622
Gwinville	8	8	0	0	654
Heidelberg, E.	13	13	0	0	1,804
Heidelberg, W.	9	8	0	1	1,169
Hub	4	4	0	0	1,649
La Grange	7	4	0	3	541
Langsdale	4	4	0	0	405
Mallalieu	3	3	0	0	1,065
Pickens	4	4	0	0	263
Tinsley	6	5	0	1	1,185
Miscellaneous	9	4	2	3	120
Wildcats	79	2	1	76	210
Total	260	154	6	100	35,725

MISSISSIPPI

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Adams	6	2	0	4	58,489
Clarke	3	0	0	3	17,288
Copiah	3	0	0	3	15,295
Greene	6	0	0	6	50,950
Grenada	2	0	0	2	6,307
Holmes	3	0	0	3	16,524
Issaquena	5	0	0	5	29,228
Jasper	2	0	0	2	15,233
Jefferson	3	0	0	3	26,898
Lamar	2	0	0	2	20,210
Leake	2	0	0	2	11,491
Lincoln	3	0	0	3	32,204
Madison	4	0	0	4	23,108
Marion	2	0	0	2	14,483
Sharkey	3	0	0	3	13,637
Warren	5	0	1	4	36,051
Wayne	6	0	0	6	44,951
Yazoo	2	0	0	2	15,246
Miscellaneous	17	0	0	17	109,700
Total	79	2	1	76	557,293

ALABAMA

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	2	0	0	2	13,790
March	2	0	0	2	2,855
April	1	0	0	1	8,521
August	2	0	0	2	11,355
September	2	0	0	2	9,005
October	1	0	0	1	4,557
December	1	0	0	1	3,210
Total	11	0	0	11	53,293

ALABAMA

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	1	1	0	0	3,252
May	1	1	0	0	3,301
July	1	0	0	1	4,978
November	1	0	0	1	4,335
December	1	1	0	0	3,300
Total	5	3	0	2	19,166

ALABAMA

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	3	1	0	2	17,042
March	2	0	0	2	2,855
April	1	0	0	1	8,521
May	1	1	0	0	3,301
July	1	0	0	1	4,978
August	2	0	0	2	11,355
September	2	0	0	2	9,005
October	1	0	0	1	4,557
November	1	0	0	1	4,335
December	2	1	0	1	6,510
Total	16	3	0	13	72,459

GEORGIA

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
March	1	0	0	1	5,008
May	1	0	0	1	3,433
Total	2	0	0	2	8,441

FLORIDA

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	3	0	0	3	28,245
February	1	0	0	1	4,133
March	1	0	0	1	4,506
April	2	0	0	2	8,729
May	1	0	0	1	3,433
June	4	0	0	4	29,252
July	3	0	0	3	24,669
August	1	0	0	1	4,787
September	1	0	0	1	5,961
October	2	0	0	2	11,090
November	4	0	0	4	16,434
December	1	0	0	1	1,175
Total	24	0	0	24	142,414

FLORIDA

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
May	1	1	0	0	11,578
September	1	1	0	0	11,576
Total	2	2	0	0	23,154

FLORIDA

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	3	0	0	3	28,245
February	1	0	0	1	4,133
March	1	0	0	1	4,506
April	2	0	0	2	8,729
May	2	1	0	1	15,011
June	4	0	0	4	29,252
July	3	0	0	3	24,669
August	1	0	0	1	4,787
September	2	1	0	1	17,537
October	2	0	0	2	11,090
November	4	0	0	4	16,434
December	1	0	0	1	1,175
Total	26	2	0	24	165,568

OKLAHOMA

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	41	6	3	32	179,739
February	30	7	6	17	123,652
March	41	5	3	33	158,180
April	25	7	0	18	99,025
May	35	6	7	22	131,854
June	35	10	2	23	126,103
July	44	6	5	33	173,158
August	46	11	3	32	189,415
September	40	5	0	35	132,594
October	78	14	5	59	270,797
November	76	10	3	63	253,137
December	82	5	1	76	248,278
Total	573	92	38	443	2,085,932

OKLAHOMA

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	165	115	11	39	599,552
February	167	96	28	43	632,731
March	187	114	22	51	599,115
April	138	85	11	42	439,912
May	192	125	17	50	637,572
June	184	113	20	51	583,964
July	234	120	57	57	732,816
August	204	139	25	40	640,787
September	245	151	31	63	708,142
October	303	204	32	67	843,381
November	255	171	32	52	689,804
December	203	129	17	57	577,062
Total	2,477	1,562	303	612	7,684,838

OKLAHOMA

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	206	121	14	71	779,291
February	197	103	34	60	756,383
March	228	119	25	84	757,295
April	163	92	11	60	538,937
May	227	131	24	72	769,426
June	219	123	22	74	710,067
July	278	126	62	90	905,974
August	250	150	28	72	830,202
September	285	156	31	98	840,736
October	381	218	37	126	1,114,178
November	331	181	35	115	942,941
December	285	134	18	133	825,340
Total	3,050	1,654	341	1,055	9,770,770

*Incl. 54 service wells.

OKLAHOMA

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Ada and East	14	1	6	7	80
Agra & E. & N.	4	2	1	1	150
Arcadia, N. E.	12	11	0	1	3,032
Aylesworth	20	15	1	4	2,619
Aztec	8	5	0	3	250
Bald Hill	7	5	0	2	25

Field—	Comp.	Oil	Gas	Dry	Prod.
Billings & W.	6	6	0	0	957
Bowring	19	16	0	3	474
Cache Creek & East	202	180	0	22	14,017
Carter County, Misc.	16	11	1	4	378
Carnegie, S. W.	8	5	0	3	71
Coon Creek	15	13	0	2	8,283
Creek County, Misc.	44	15	5	24	663
Cement	80	43	32	5	3,716
Cheyarha & S. W.	32	25	0	7	3,738
Crescent & N. E.	20	17	2	1	7,228
Cumberland	13	12	0	1	21,755
Cushing & N. W. & New	25	17	1	7	654
Davenport & N. & W.	31	23	1	7	1,435
Dilworth	12	9	1	2	502
Duncan, West	10	9	0	1	475
Ed Cox	25	20	0	5	1,207
Edmond, West	74	72	0	2	22,803
Essaquanahdale	8	7	0	1	364
Garfield County, Misc.	8	6	0	2	758
Garvin County, Misc.	26	22	0	4	17,178
Glenn	46	14	0	32	182
Hughes County, Misc.	34	23	7	4	1,182
Hazel District	10	4	0	6	184
Healdton	18	14	0	4	220
Hewitt & West	12	6	0	6	102
Hickory Creek & South	10	7	1	2	163
Hobart & N. E.	8	4	0	4	850
Holdenville, W.	12	8	0	4	282
Hoover, N. W.	26	17	3	6	1,229
Horn's Corner & N.	10	8	0	2	1,349
Hugoton	151	4	144	3	997
Jackson	19	18	0	1	2,058
Jesse	6	2	2	2	286
Jones & N. E.	10	10	0	0	797
Kay County, Misc.	7	5	0	2	304
Kellyville Dist.	14	2	2	10	45
Keokuk	12	7	0	5	380
Konawa & W.	9	2	2	5	73
Lawton	7	3	0	4	12
Lincoln County, Misc.	24	13	4	7	558
Loco & W.	8	4	0	4	50
Lone Grove, S. W.	32	31	0	1	4,249
Lovell, S. & S. E.	13	10	0	3	2,696
McClain County, Misc.	7	5	0	2	1,942
Moore, S.	12	11	0	1	3,431
Moore, W.	9	8	0	1	2,357
Noble County, Misc.	8	4	0	4	348
Okfuskee County, Misc.	34	11	10	13	946
Okmulgee County, Misc.	30	13	8	9	317
Osage County, Misc.	59	26	1	32	1,839
Pawnee County, Misc.	9	5	0	4	181
Payne County, Misc.	10	8	0	2	336
Pontotoc County, Misc.	36	19	5	12	1,970
Pottawatomie County, Misc.	16	9	1	6	1,415
Pauls Valley, E.	10	6	1	3	347
Polo	5	2	0	3	220
Rosanna	8	7	0	1	580
Sac-Fox	7	6	1	0	701
Sancho	6	3	1	2	48
Seminole & E.	21	13	1	7	1,333
Seminole County, Misc.	42	24	3	15	4,307
Skellyville	8	6	0	2	240
Slick & N. & S.	28	16	1	11	1,877
Soldier Creek & N.	55	48	0	7	8,163
Spaulding & S. & S. E.	32	21	0	11	901
Spring	10	2	0	8	140
Steedman, N.	12	6	2	4	679
Stephens County, Misc.	15	5	0	10	817
Sylvian	15	14	0	1	1,205
Tussy	28	20	2	6	1,235
Ulan, E.	5	0	3	2	0
Velma & W.	74	64	2	8	13,517
Walters	26	15	2	9	586
Walters, S.	7	5	1	1	175
Weleetka & S.	7	1	3	3	48
Wewoka	6	2	0	4	38
Wewoka, N. E.	12	8	0	4	891
Wewoka Lake	12	11	0	1	919
Wildcat Jim	24	23	0	1	1,616
Wilzetta & N. W. & S. W.	21	13	0	8	2,458
Yeager & N.	4	2	1	1	226
Miscellaneous	510	317	38	155	37,697
Wildcats	573	92	38	443	17,501
Total	3,050	1,654	341	1,055*	244,607

*Incl. 54 service wells.

OKLAHOMA

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Caddo	7	0	0	7	13,612
Carter	7	0	0	7	23,842
Cleveland	3	1	0	2	23,074
Comanche	9	1	0	8	17,796
Cotton	122	7	0	115	258,712
Creek	23	4	3	16	74,759
Garfield	6	1	0	5	36,213
Garvin	36	10	2	24	169,353
Hughes	26	9	6	11	86,479
Jefferson	10	1	0	9	24,414
Kay	4	0	0	4	16.548
Kiowa	4	0	0	4	9,524
Lincoln	35	6	3	26	148.580
Logan	18	1	1	16	101,635
Love	3	1	0	2	16,411
McClain	13	6	0	7	110,449
Major	3	2	0	1	24,439
Noble	11	1	0	10	53,299
Okfuskee	26	4	6	16	91,243
Oklahoma	12	5	1	6	75,457
Osage	13	2	0	11	39,949
Pawnee	11	1	0	10	34,221
Payne	11	1	1	9	44,078
Pittsburg	3	1	2	0	8,789
Pontotoc	16	0	3	13	47,564
Pottawatomie	16	5	0	11	79,512
Seminole	36	9	2	25	124,465
Stephens	36	7	1	28	133,794
Tillman	8	0	0	8	22,399
Miscellaneous	45	6	7	32	175,322
Total	573	92	38	443	2,085,932

KANSAS

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	28	1	0	27	107,082
February	19	3	1	15	66,496
March	18	2	0	16	59,854
April	22	2	2	18	91,329
May	26	5	0	21	93,360
June	24	2	0	22	83,330
July	25	1	0	24	91,522
August	34	5	1	28	131,107
September	26	2	0	24	94,133
October	26	4	0	22	95,277
November	37	0	1	36	133,909
December	22	4	0	18	75,970
Total	307	31	5	271	1,123,369

KANSAS

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	129	77	24	28	420,240
February	134	88	18	28	429,215
March	154	101	20	33	500,904
April	105	66	12	27	338,563
May	162	98	16	48	529,268
June	126	74	22	30	395,601
July	132	88	19	25	407,847
August	165	103	20	42	510,187
September	131	74	31	26	405,499
October	159	83	35	41	496,006
November	137	76	33	28	422,692
December	186	96	45	45	576,420
Total	1,720	1,024	295	401	5,432,442

KANSAS

Total Completions by Months

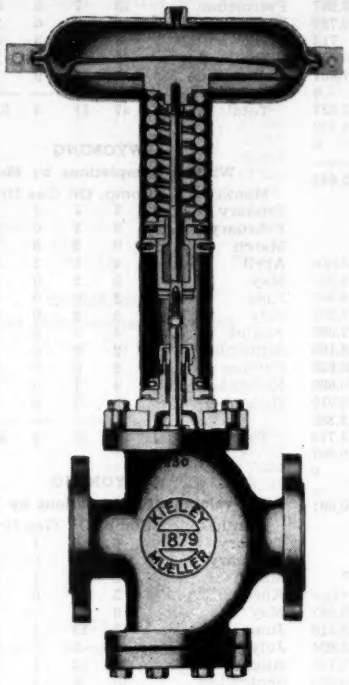
Month—	Comp.	Oil	Gas	Dry	Footage
January	157	78	24	55	527,322
February	153	91	19	43	495,711
March	172	103	20	49	560,758
April	127	68	14	45	429,892
May	188	103	16	69	622,628
June	150	76	22	52	478,931
July	157	89	19	49	499,369
August	199	108	21	70	641,294
September	157	76	31	50	499,632
October	185	87	35	63	591,283
November	174	76	34	64	556,601
December	208	100	45	63	652,390
Total	2,027	1,055	300	*672	6,555,811

*Incl. 15 service wells.

KANSAS

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Adell	5	4	0	1	3,181
Ainsworth & S. & S. E.	16	9	0	7	5,129
Arnold	3	2	0	1	1,783
Barry & S. E.	8	3	0	5	9,000
Beaver & South	9	5	0	4	845
Behrens	9	7	1	1	1,962
Bemis-Shutts	20	19	0	1	9,905
Benson	4	3	0	1	255
Big Creek	7	5	0	2	9,312
Bloomer	16	15	0	1	5,787
Brandt-Sensebaugh	3	2	0	1	80
Canton, North	4	2	0	2	54
Carroll	8	8	0	0	1,229
Catherine, N. W.	6	4	0	2	1,285
Chase	48	43	0	5	4,465
Chitwood	19	18	1	0	17,307
Couch	22	18	0	4	1,701
Countryman	4	4	0	0	190
Crowther	22	18	0	4	31,288
Curtis	5	4	0	1	5,456
Dayton, North	6	4	0	2	326
Deerhead	4	1	3	0	3,000
Deichman	8	4	0	4	827
Douglas	5	3	0	2	100
Ellis	3	1	0	2	35
Ellsworth	4	2	0	2	138
El Dorado	54	46	0	8	3,762
Edwards	14	13	0	1	18,135
Fairport	7	5	0	2	730
Feltes, N. W.	9	5	0	4	2,033
Ferrell	5	2	0	3	40
Forest Hill	12	8	0	4	7,638
Frog Hollow	5	2	0	3	114
Gorham	7	7	0	0	486
Hammer	3	3	0	0	93
Hall-Gurney	30	25	0	5	3,988
Hansen	9	8	0	1	2,480
Henderson	4	2	0	2	170
Herzog	4	3	0	1	514
Hickory Creek	13	13	0	0	947
Hiss, West	3	2	0	1	515
Hugoton	268	0	265	3	0
Kraft-Prusa & Northeast	81	61	0	20	39,354
Kramer-Stern	7	4	0	3	210
Lamont	9	6	0	3	147
Laton	3	1	0	2	25
Lindsborg	8	7	0	1	2,306
Logan	3	2	0	1	173
Lost Springs & North	10	5	0	5	375
McClellan	4	2	0	2	715
McLouth & N. & E.	5	2	0	3	65
Marjorie	5	1	4	0	293
Merten & N. E.	17	9	0	8	851
Merten, West	10	10	0	0	9,955
Morel	17	14	0	3	21,619
Mueller	10	9	0	1	4,177
Murphy	4	3	0	1	275
Nicholson	8	5	0	3	2,152
Paden	10	9	0	1	2,300
Pawnee & N. E. & S.	5	3	1	1	292
Pierce	13	10	0	3	664
Pleasant	3	2	0	1	164
Rainbow Bend & N. E.	6	2	0	4	55
Ray & West	10	8	0	2	2,255
Rahn	13	9	0	4	1,329
Raymond	3	2	0	1	4,818
Reynolds-Schafer	6	5	0	1	199
Ritz-Canton	5	3	0	2	70
Russell	10	8	0	2	1,221
Ryan & S. & S. E.	8	6	1	1	1,780
Salina	6	5	0	1	1,687
Schmeidler	3	1	0	2	75



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Field—	Comp.	Oil	Gas	Dry	Prod.
Severy, North	4	2	0	2	90
Shriver	3	3	0	0	1,981
Silica & South	11	5	0	6	2,021
Sitner	5	4	0	1	394
Skinner	18	4	7	7	4,306
Smock-Sluss	5	3	0	2	145
Stoltenberg	41	33	0	8	8,691
Sun City	6	3	0	3	15,586
Trapp	150	127	0	23	51,263
Virgil	27	22	0	5	785
Virgil, North	8	7	0	1	185
Vohs	15	15	0	0	12,512
Walter	8	4	0	4	1,315
Webster	7	4	0	3	5,283
Welch & North	7	4	0	3	146
Whelan	4	2	2	0	83
Winterschied	6	6	0	0	122
Young	15	11	0	4	450
Zenith-Peace Creek	4	4	0	0	587
Miscellaneous	359	195	10	154	59,350
Wildcats	307	31	5	271	11,979
Total	2,027	1,055	300	*672	421,181

*Incl. 15 service wells.

KANSAS

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Barber	8	2	1	5	39,281
Barton	23	2	0	21	77,188
Butler	21	3	0	18	60,088
Cowley	12	1	0	11	36,892
Decatur	2	0	0	2	8,339
Dickinson	2	0	0	2	6,074
Ellis	19	3	0	16	69,869
Ellsworth	7	0	0	7	20,909
Gore	2	0	0	2	8,631
Graham	6	0	0	6	24,862
Gray	2	0	0	2	10,757
Harper	4	0	0	4	20,021
Kearny	5	0	2	3	16,157
Kingman	4	0	0	4	18,607
McPherson	8	0	0	8	25,116
Marion	11	1	0	10	29,997
Meade	2	0	0	2	12,907
Morris	4	0	0	4	9,452
Ness	3	0	0	3	14,437
Norton	7	0	0	7	26,207
Ottawa	2	0	0	2	6,665
Pawnee	7	1	0	6	27,033
Phillips	4	1	0	3	15,139
Pratt	11	2	0	9	50,061
Reno	4	0	0	4	13,812
Rice	18	1	0	17	60,967
Rooks	22	5	0	17	79,258
Rush	13	2	0	11	48,877
Russell	3	0	0	3	9,996
Saline	5	1	0	4	17,103
Sedgwick	5	1	1	3	16,037
Seward	2	0	0	2	14,806
Sheridan	4	0	0	4	22,478
Stafford	13	3	0	10	51,673
Sumner	12	1	0	11	46,417
Trego	7	0	0	7	29,092
Woodson	4	0	0	4	9,267
Miscellaneous	19	1	1	17	68,877
Total	307	31	5	271	1,123,369

NEBRASKA-MISSOURI-IOWA

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	1	0	0	1	5,110
March	1	0	0	1	1,400
May	2	0	0	2	4,783
June	1	0	0	1	713
August	6	0	0	6	7,951
October	1	0	0	1	3,537
November	2	0	0	2	4,046
Total	14	0	0	14	27,540

NEBRASKA-MISSOURI-IOWA

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
February	2	2	0	0	4,511
April	1	1	0	0	2,287
November	1	0	0	1	1,306
Total	4	3	0	1	8,104

NEBRASKA-MISSOURI-IOWA

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	1	0	0	1	5,110
February	2	2	0	0	4,511
March	1	0	0	1	1,400
April	1	1	0	0	2,287
May	2	0	0	2	4,783
June	1	0	0	1	713
August	6	0	0	6	7,951
September	0	0	0	0	0
October	1	0	0	1	3,537
November	3	0	0	3	5,352
December	0	0	0	0	0
Total	18	3	0	15	35,644

MONTANA

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	1	0	0	1	4,052
February	2	1	0	1	4,581
March	3	2	0	1	7,278
April	3	2	0	1	7,090
May	6	0	0	6	22,109
June	10	5	0	5	25,929
July	4	0	1	3	8,680
August	5	0	0	5	15,919
September	2	1	0	1	12,382
October	5	0	1	4	12,774
November	6	0	2	4	19,867
December	0	0	0	0	0
Total	47	11	4	32	140,661

MONTANA

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	21	16	2	3	45,587
February	15	8	2	5	25,410
March	18	12	1	5	35,894
April	16	12	3	1	33,719
May	16	7	4	5	30,250
June	30	13	10	7	56,893
July	20	13	5	2	36,515
August	31	17	8	6	60,480
September	28	15	10	3	53,509
October	25	13	4	8	50,323
November	32	15	12	5	67,152
December	14	7	6	1	24,490
Total	266	148	67	51	520,222

MONTANA

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	22	16	2	4	49,639
February	17	9	2	6	29,991
March	21	14	1	6	43,172
April	19	14	3	2	40,809
May	22	7	4	11	52,359
June	40	18	10	12	82,822
July	24	13	6	5	45,195
August	36	17	8	11	76,399
September	30	16	10	4	65,891
October	30	13	5	12	63,097
November	38	15	14	9	87,019
December	14	7	6	1	24,490
Total	313	159	71	83	660,883

MONTANA

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Bowdoin	28	0	27	1	0
Cat Creek	41	25	0	16	4,581
Cedar Creek	24	0	21	3	0
Cut Bank	78	57	9	12	3,470
Gage	2	2	0	0	271
Hardin	6	0	6	0	0
Kevin-Sunburst	79	58	3	18	1,907
Pondera	7	6	0	1	738
Whitlash	1	0	1	0	0
Total	266	148	67	51	10,967

MONTANA

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Big Horn	2	0	0	2	9,072
Cascade	1	0	0	1	750
Custer	1	0	0	1	10,018
Fergus	2	0	0	2	4,498
Glacier	12	3	0	9	46,910
Golden Valley	1	0	0	1	4,941
Liberty	1	0	1	0	4,593
Meagher	1	0	0	1	1,288
Musselshell	1	0	0	1	4,087
Petroleum	13	7	0	6	26,769
Teton	2	0	0	2	6,141
Toole	8	1	3	4	17,552
Wheatland	1	0	0	1	2,050
Yellowstone	1	0	0	1	4,052
Total	47	11	4	32	142,721

WYOMING

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	7	1	2	4	31,187
February	9	1	0	8	41,101
March	9	2	0	7	40,426
April	4	1	1	2	19,602
May	3	2	0	1	17,846
June	2	0	0	2	5,607
July	5	2	0	3	35,094
August	4	1	0	3	17,249
September	2	0	0	2	6,728
October	2	0	0	2	7,659
November	4	1	0	3	15,977
December	3	2	0	1	17,032
Total	54	13	3	38	255,508

WYOMING

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	6	4	1	1	22,824
February	7	6	0	1	26,403
March	9	8	1	0	39,350
April	3	3	0	0	9,179
May	8	7	0	1	30,694
June	15	13	1	1	63,770
July	9	9	0	0	37,381
August	17	14	1	2	61,825
September	10	8	1	1	36,547
October	8	4	2	2	40,909
November	14	13	1	0	61,485
December	8	7	0	1	29,993
Total	114	96	8	10	460,360

WYOMING

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	13	5	3	5	54,011
February	16	7	0	9	67,504
March	18	10	1	7	79,776
April	7	4	1	2	28,781
May	11	9	0	2	48,540
June	17	13	1	3	69,377
July	14	11	0	3	72,475
August	21	15	1	5	79,074
September	12	8	1	3	43,275
October	10	4	2	4	48,568
November	18	14	1	3	77,462
December	11	9	0	2	47,025
Total	168	109	11	48	715,868

WYOMING

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Beaver Creek	2	0	2	0	0
Big Hollow	2	1	0	1	10
Big Muddy	9	8	0	1	853
Byron	5	5	0	0	1,052
Circle Ridge	2	2	0	0	250
E. Lance Creek	6	5	0	1	2,669
Frannie	7	7	0	0	1,684
Garland	5	5	0	0	1,240
Gebo	6	6	0	0	1,549
Hamilton	5	5	0	0	1,600
Lance Creek	6	3	1	2	288
Little Buck Creek	2	2	0	0	862
Little Buffalo Basin	5	5	0	0	1,261
N. Baxter Basin	2	1	1	0	480
Oregon Basin	6	6	0	0	1,033
Osage	2	2	0	0	20
Rock River	5	4	0	1	394
Salt Creek	5	5	0	0	312
S. Elk Basin	3	2	1	0	1,440
Spence	4	4	0	0	695
Steamboat Butte	2	2	0	0	1,082
Zimmerman Butte	4	3	0	1	472
Miscellaneous	19	13	3	3	4,635
Total	114	96	8	10	23,881

WYOMING

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Big Horn	6	0	0	6	23,577
Carbon	6	1	0	5	35,579
Converse	3	1	0	2	19,402
Fremont	8	3	1	4	45,481
Hot Springs	4	2	0	2	10,842
Natrona	5	0	0	5	13,551
Park	3	1	1	1	17,357
Platte	3	0	0	3	5,961
Sweetwater	5	0	1	4	25,396
Uinta	1	1	0	0	12,894
Washakie	3	2	0	1	17,892
Weston	4	2	0	2	12,686
Miscellaneous	3	0	0	3	14,890
Total	54	13	3	38	255,508

COLORADO

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	1	0	0	1	4,641
February	2	0	0	2	15,618
March	3	2	0	1	20,320
April	1	0	0	1	3,498
May	3	0	0	3	18,002
June	1	0	0	1	12,018
July	2	0	0	2	7,222
August	1	1	0	0	6,110
September	1	0	0	1	7,485
October	2	0	0	2	7,080
November	1	0	0	1	5,605
December	3	1	0	2	15,582
Total	21	4	0	17	123,181

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	9	9	0	0	58,543
February	4	4	0	0	22,505
March	6	6	0	0	37,985
April	13	12	1	0	80,813
May	6	6	0	0	38,836
June	16	15	0	1	103,409
July	9	9	0	0	57,398
August	15	15	0	0	96,649
September	18	18	0	0	116,683
October	14	14	0	0	86,830
November	20	20	0	0	127,730
December	16	16	0	0	104,289
Total	146	144	1	1	931,664

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	10	9	0	1	63,184
February	6	4	0	2	38,123
March	9	8	0	1	58,305
April	14	12	1	1	84,311
May	9	6	0	3	56,832
June	17	15	0	2	115,427
July	11	9	0	2	64,620
August	16	16	0	0	102,759
September	19	18	0	1	124,168
October	16	14	0	2	93,910
November	21	20	0	1	133,335
December	19	17	0	2	119,871
Total	167	148	1	18	1,054,845

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Hiawatha	1	0	1	0	0
Iles	2	2	0	0	1,074
Rangely	139	138	0	1	55,680
Wilson Creek	4	4	0	0	1,319
Total	146	144	1	1	58,073

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Baca	3	0	0	3	14,856
Jackson	2	0	0	2	2,741
Moffat	2	1	0	1	13,816
Pueblo	2	0	0	2	8,867
Rio Blanco	5	3	0	2	44,221
Miscellaneous	7	0	0	7	36,680
Total	21	4	0	17	123,181

UTAH

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
February	1	1	0	0	1,215
March	1	0	0	1	1,580
November	1	0	0	1	2,107
Total	3	1	0	2	4,902

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
September	1	0	0	1	3,655
Total	1	0	0	1	3,655

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
February	1	1	0	0	1,215
March	1	0	0	1	1,580
September	1	0	0	1	3,655
November	1	0	0	1	2,107
Total	4	1	0	3	8,557

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Seven Mile	1	0	0	1	25
Total	1	0	0	1	25

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Grand	1	1	0	0	1,215
San Juan	1	0	0	1	1,580
Uintah	1	0	0	1	2,107
Total	3	1	0	2	4,902

NORTHWEST NEW MEXICO

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	1	0	0	1	4,052
March	1	0	0	1	2,770
May	1	0	0	1	4,550
October	1	0	0	1	2,170
November	1	0	0	1	3,105
December	1	0	0	1	2,730
Total	6	0	0	6	19,377

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	3	1	2	0	5,625
February	3	0	3	0	6,806
March	1	1	0	0	1,389
April	2	0	2	0	10,720
May	1	0	1	0	1,893
June	2	0	2	0	3,823
July	3	0	2	1	5,242
August	3	1	2	0	4,471
September	3	0	3	0	9,549
October	8	5	3	0	13,154
November	2	0	2	0	11,003
December	3	0	3	0	5,025
Total	34	8	25	1	78,700

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	4	1	2	1	9,677
February	3	0	3	0	6,806
March	2	1	0	1	4,159
April	2	0	2	0	10,720
May	2	0	1	1	6,443
June	2	0	2	0	3,823
July	3	0	2	1	5,242
August	3	1	2	0	4,471
September	3	0	3	0	9,549
October	9	5	3	1	15,324
November	3	0	2	1	14,108
December	4	0	3	1	7,755
Total	40	8	25	7	98,077

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Aztec	1	1	0	0	12
Barker Creek	5	0	5	0	0
Blanco	2	0	2	0	0
Fulcher Basin	18	0	18	0	0
Hospah	6	5	0	1	125
Table Mesa	2	2	0	0	108
Total	34	8	25	1	245

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Bernalillo	1	0	0	1	2,770
McKinley	1	0	0	1	3,105
San Miguel	3	0	0	3	9,450
Torrance	1	0	0	1	4,052
Total	6	0	0	6	19,377

ILLINOIS

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	38	3	0	35	94,151
February	32	7	0	25	84,169
March	28	1	0	27	69,458
April	56	7	0	49	144,830
May	34	5	0	29	82,513
June	67	13	0	54	161,826
July	59	11	0	48	147,749
August	54	9	1	44	135,785
September	84	15	1	68	204,762
October	69	12	0	57	169,619
November	63	9	1	53	157,796
December	51	4	1	46	128,263
Total	635	96	4	535	1,580,921

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	116	89	1	26	276,138
February	105	89	0	16	264,166
March	128	96	0	32	317,133
April	176	126	0	50	449,033
May	115	93	0	22	284,493
June	169	126	0	43	430,349
July	134	101	0	33	347,265
August	128	103	0	25	323,306
September	190	133	1	56	486,202
October	136	95	0	41	356,910
November	150	101	0	49	388,590
December	161	96	0	65	420,204
Total	1,708	1,248	2	*458	4,343,791

*Includes 2 service wells.

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	154	92	1	61	370,289
February	137	96	0	41	348,335
March	156	97	0	59	386,591
April	232	133	0	99	593,863
May	149	98	0	51	367,006
June	236	139	0	97	592,175
July	193	112	0	81	495,014
August	182	112	1	69	459,093
September	274	148	2	124	690,964
October	205	107	0	98	526,529
November	213	110	1	102	546,386
December	212	100	1	111	548,467
Total	2,343	1,344	6	*933	5,924,712

*Includes 2 service wells.

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Albion	7	6	0	1	151
Allendale	16	8	0	8	433
Bible Grove	12	10	0	2	757
Boos, North	13	11	0	2	1,358
Boyd	23	18	0	5	908
Bungay	26	20	1	5	2,347
Calhoun	72	48	1	23	13,710
Centralia	16	16	0	0	284
Cisne	15	8	0	7	2,678
Clay City	163	122	0	41	21,002
Concord	18	17	0	1	1,975
Concord, North	8	5	0	3	731
Covington, East	10	6	0	4	305
Dix	7	6	0	1	260
Dundas	9	3	0	6	1,465
Flora, South	6	2	0	4	404

Field—	Comp.	Oil	Gas	Dry	Prod.
Friendsville, N.	14	7	0	7	489
Friendsville, S.	12	10	0	2	787
Gallagher	4	3	0	1	666
Geff	19	15	0	4	1,081
Golden Gate	10	6	0	4	337
Herald	57	47	0	10	3,780
Hoosier	9	5	0	4	157
Ingraham, West	56	41	0	15	6,026
Keensburg	6	2	0	4	40
Keenville	26	22	0	4	5,544
Lancaster, S.	6	0	0	6	0
Lawrence	14	10	0	4	878
Louden	5	3	0	2	128
Main	6	2	0	4	2
Maple Grove	14	13	0	1	1,380
Marine	58	53	0	5	4,958
Markham City, West	27	22	0	5	4,499
Mason, South	5	4	0	1	193
Mattoon	338	297	0	41	34,733
Mt. Carmel	32	24	0	8	3,115
New Harmony	29	23	0	6	4,187
Noble	7	2	0	5	67
Parkersburg	30	26	0	4	3,624
Patoka	9	6	0	3	82
Patton, West	14	11	0	3	830
Phillipstown	17	14	0	3	823
Roland	8	6	0	2	189
Sailor Springs	7	6	0	1	273
Samsville, North	14	11	0	3	727
Springerton	10	8	0	2	669
Stanford	10	5	0	5	1,842
Stanford, South	15	13	0	2	1,330
Stokes-Brownsville	102	84	0	18	7,225
Storms	12	9	0	3	891
Thackeray	10	4	0	6	673
Trumbull	10	9	0	1	716
West End	8	4	0	4	717
Willow Hill	8	3	0	5	342
Willow Hill, East	5	3	0	2	489
Miscellaneous	244	109	0	135	6,217
Total	1,708	1,248	2	*458	149,447

*Includes two service wells.

ILLINOIS

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Bond	11	0	1	10	19,469
Champaign	3	0	0	3	1,712
Christian	5	1	0	4	8,064
Clark	5	1	0	4	9,482
Clay	49	17	0	32	144,373
Clinton	26	3	0	23	38,563
Coles	39	1	0	38	70,006
Crawford	2	0	0	2	4,241
Cumberland	23	2	0	21	52,633
Edgar	5	0	1	4	3,609
Edwards	19	2	0	17	61,022
Effingham	23	0	0	23	59,996
Fayette	18	0	0	18	36,979
Franklin	6	0	0	6	18,298
Gallatin	14	3	0	11	39,441
Hamilton	30	3	0	27	103,350
Jasper	26	6	0	20	73,655
Jefferson	22	2	0	20	58,489
Lawrence	13	2	0	11	28,628
Macon	2	0	0	2	4,533
Macoupin	4	0	0	4	4,436
Madison	10	1	0	9	18,659
Marion	26	0	0	26	61,540
Morgan	4	0	2	2	4,433
Moultrie	7	0	0	7	14,424
Perry	3	0	0	3	4,419
Randolph	2	0	0	2	2,494
Richland	29	5	0	24	89,621
Saline	2	0	0	2	6,307
St. Clair	5	0	0	5	6,176
Shelby	37	2	0	35	76,350
Wabash	26	10	0	16	67,248
Washington	20	1	0	19	31,867
Wayne	57	16	0	41	184,453
White	52	18	0	34	156,533
Miscellaneous	10	0	0	10	13,418
Total	635	96	4	535	1,580,921

MICHIGAN

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	27	2	1	24	64,711
February	22	3	0	19	55,943
March	13	1	0	12	31,521
April	18	2	0	16	39,697
May	24	1	1	22	49,672
June	24	0	1	23	55,837
July	15	3	0	12	34,632
August	30	1	0	29	68,436
September	18	1	0	17	48,335
October	15	1	1	13	29,939
November	24	0	0	24	65,395
December	17	1	2	14	38,435
Total	247	16	6	225	582,553

MICHIGAN

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	43	29	5	9	113,191
February	31	17	3	11	78,591
March	31	15	4	12	72,297
April	27	10	4	13	65,618
May	56	26	5	25	132,783
June	50	18	5	27	119,955
July	48	19	3	26	113,932
August	62	21	16	25	115,454
September	57	23	18	16	105,818
October	49	11	12	26	86,888
November	38	14	11	13	70,886
December	49	15	15	19	91,389
Total	541	218	101	222	1,166,802

MICHIGAN

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	70	31	6	33	177,902
February	53	20	3	30	134,534
March	44	16	4	24	103,818
April	45	12	4	29	105,315
May	80	27	6	47	182,455
June	74	18	6	50	175,792
July	63	22	3	38	148,564
August	92	22	16	54	183,890
September	75	24	18	33	154,153
October	64	12	13	39	116,827
November	62	14	11	37	136,281
December	66	16	17	33	129,824
Total	788	234	107	*447	1,749,355

*Incl. 6 storage wells.

MICHIGAN

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Adams, North	9	7	0	2	1,615
Allegan	4	1	0	3	10
Arbela	4	4	0	0	95
Ashton	7	2	1	4	250
Bangor & North	3	1	0	2	35
Big Rapids	5	0	4	1	0
Bloomer	5	3	0	2	185
Brenner	13	10	0	3	1,162
Casco	10	3	0	7	135
Coldwater	25	18	5	2	5,491
Columbia & West & South	9	3	0	6	225
Crystal & West	4	1	0	3	50
Dalton	3	3	0	0	90
Deep River	64	40	0	24	9,304
Dorr	9	5	0	4	195
Douglass	8	4	0	4	431
Elba	14	4	2	8	510
Essexville	13	8	0	5	923
Fillmore	7	3	0	4	90
Fork	10	2	4	4	35
Garfield	7	1	4	2	100
Geneva & North	10	3	0	7	280
Goodwell & South	15	0	9	6	0
Green	5	0	1	4	0
Harrison	7	1	2	4	65
Hawkhead	26	13	0	13	743
Jamestown	3	0	0	3	0
Kawkawlin	15	12	0	3	827
Lacota	8	4	0	4	170
Lincoln	22	0	20	2	0
Logan & Extension	4	0	2	2	0
Monterey & South	11	4	0	7	1,420
Monterey, New	7	2	0	5	425
Morton	5	0	3	2	0
Norwich, East	11	9	1	1	430
Pinconning	7	1	0	6	100
Reed City	8	1	7	0	15
Rockford & Outpost	16	8	0	8	1,365
Roscommon	8	0	6	2	0
Rose City	3	3	0	0	25
Sherman	5	0	3	2	0
Tallmadge, South	3	3	0	0	85
Wheatland & Outpost	3	1	0	2	290
Winterfield	24	1	17	6	10
Miscellaneous	82	29	10	43	2,580
Wildcat	247	16	6	225	868
Total	788	234	107	447	30,629

*Incl. 6 storage wells.

MICHIGAN

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Allegan	42	4	0	38	63,731
Arenac	11	0	0	11	31,864
Barry	3	0	0	3	6,737
Bay	11	1	0	10	35,272
Clare	3	0	0	3	7,636
Clinton	3	0	0	3	8,993
Gratiot	12	0	0	12	32,045
Huron	4	0	0	4	16,073
Isabella	12	1	1	10	38,595
Kalamazoo	4	0	0	4	5,462
Kent	12	2	0	10	28,404
Lake	3	0	0	3	8,975
Livingston	6	0	1	5	8,124
Mecosta	11	0	3	8	28,396
Midland	4	0	0	4	13,704
Missaukee	9	0	0	9	22,928
Montcalm	16	2	0	14	47,924
Muskegon	4	0	0	4	7,750
Newaygo	9	0	0	9	20,478
Ogemaw	4	0	0	4	10,370
Osceola	4	0	0	4	5,999
Ottawa	5	1	1	3	7,792
Saginaw	6	0	0	6	16,186
Van Buren	16	1	0	15	20,153
Wexford	4	0	0	4	15,896
Miscellaneous	29	4	0	25	73,066
Total	247	16	6	225	582,553

OHIO

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	5	0	2	3	18,528
February	7	1	4	2	24,659
March	7	0	2	5	23,756
April	3	0	2	1	13,426
May	8	0	2	6	24,065
June	2	1	0	1	7,296
July	3	0	0	3	11,749
August	5	0	1	4	14,746
September	4	0	1	3	12,554
October	8	1	0	7	27,517
November	5	0	1	4	13,292
December	7	1	3	3	24,032
Total	64	4	18	42	215,620

OHIO

Development Completions by Fields

Month—	Comp.	Oil	Gas	Dry	Footage
January	60	13	32	15	161,213
February	84	18	39	27	206,756
March	103	26	46	31	271,936
April	85	29	33	23	213,876
May	111	32	48	31	296,267
June	106	29	43	34	279,820
July	98	23	45	30	253,794
August	111	40	35	36	273,236
September	114	33	48	33	307,638
October	133	38	61	34	349,807
November	111	19	53	39	319,415
December	93	26	42	27	252,974
Total	1,211	326	525	360	3,186,732

OHIO

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	65	13	34	18	179,741
February	91	19	43	29	231,415
March	110	26	48	36	295,692
April	88	29	35	24	227,302
May	119	32	50	37	320,332
June	108	30	43	35	287,116
July	101	23	45	33	265,543
August	116	40	36	40	287,982
September	118	33	49	36	320,192
October	141	39	61	41	377,324
November	116	19	54	43	332,707
December	102	27	45	30	277,006
Total	1,275	330	543	402	3,402,352

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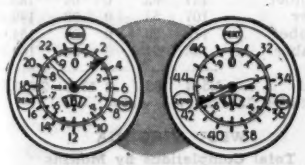

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The Decca Navigator Company, Limited

Survey Department 1-3 Brixton Road, London, S.W.9. England

telephone: Reliance 3311 *telegrams and cables:* Decnav, London

INDIANA

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	6	0	0	6	13,564
February	2	0	0	2	4,208
March	8	2	0	6	12,660
April	9	2	0	7	15,740
May	7	3	0	4	11,126
June	10	2	1	7	14,066
July	15	0	1	14	30,292
August	9	0	0	9	19,534
September	8	1	0	7	14,304
October	17	3	0	14	29,699
November	15	3	0	12	27,766
December	12	1	0	11	28,338
Total	118	17	2	99	221,297

INDIANA

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	38	30	0	8	74,900
February	41	33	3	5	76,409
March	27	23	1	3	50,363
April	34	18	5	11	64,682
May	35	23	2	10	60,054
June	49	31	2	16	79,931
July	45	25	4	16	81,784
August	43	32	1	10	71,612
September	46	25	2	19	86,709
October	40	27	3	10	69,674
November	29	21	0	8	53,200
December	37	25	0	12	80,101
Total	464	313	23	128	849,419

INDIANA

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	44	30	0	14	88,464
February	43	33	3	7	80,617
March	35	25	1	9	63,023
April	43	20	5	18	80,422
May	42	26	2	14	71,180
June	59	33	3	23	93,997
July	60	25	5	30	112,076
August	52	32	1	19	91,146
September	54	26	2	26	101,013
October	57	30	3	24	99,373
November	44	24	0	20	80,966
December	49	26	0	23	108,439
Total	582	330	25	227	1,070,716

INDIANA

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Bufkin	3	2	0	1	195
Cannelburg	7	3	0	4	20
College	4	3	0	1	173
Dodds Bridge	2	2	0	0	197
Enterprise	6	4	0	2	41
Farmersville	16	14	0	2	471
Greensburg	7	0	7	0	0
Griffin	24	14	0	10	1,192
Hatfield	9	7	0	2	283
Henderson	3	1	1	1	10
Heusler	9	5	0	4	1,095
Horton	6	3	0	3	218
Iva	7	0	4	3	0
Jeffries	13	7	0	6	708
Kirksville	6	1	1	4	20
Lamotte	5	2	0	3	60
Mt. Carmel, East	48	44	0	4	3,342
New Harmony	9	6	0	3	897
New Harmony, South	72	65	0	7	11,175
Oatsville	3	1	0	2	10
Owensville, N.	52	42	0	10	9,027
Rich Valley	3	3	0	0	35
Rockport	10	9	0	1	133
St. Francesville	6	3	0	3	230
Trenton	25	13	6	6	153
Union-Bowman	40	26	3	11	801
Vernon Heights	2	1	0	1	15
Vienna	3	2	0	1	24
Welborn	3	1	0	2	25
Wheeling East	17	8	0	9	386
Miscellaneous	44	21	1	22	763
Total	464	313	23	128	31,699

INDIANA

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Clay	2	0	0	2	4,875
Floyd	3	0	0	3	4,179
Fountain	2	0	0	2	3,757
Gibson	24	5	0	19	53,339
Knox	4	1	0	3	9,043
La Porte	3	0	1	2	2,441
Martin	2	0	0	2	795
Miami	2	0	0	2	2,242
Owen	2	0	0	2	5,100
Pike	8	2	0	6	13,561
Porter	2	0	0	2	694
Posey	25	6	0	19	67,382
Spencer	9	3	0	6	9,081
Sullivan	7	0	0	7	5,152
Vanderburgh	4	0	0	4	9,933
Vigo	2	0	0	2	1,186
Miscellaneous	17	0	1	16	28,537
Total	118	17	2	99	221,297

WESTERN KENTUCKY

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	13	4	1	8	24,748
February	4	1	0	3	8,285
March	14	2	0	12	24,760
April	6	1	1	4	13,989
May	3	0	0	3	1,143
June	8	1	0	7	12,980
July	10	0	0	10	15,863
August	13	3	0	10	28,227
September	7	1	0	6	7,586
October	9	2	0	7	12,251
November	11	2	0	9	21,986
December	9	0	0	9	21,848
Total	107	17	2	88	193,666

WESTERN KENTUCKY

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	45	35	1	9	85,564
February	23	12	2	9	36,547
March	36	24	2	10	58,860
April	33	16	1	16	44,222
May	27	18	2	7	45,363
June	59	36	2	21	76,678
July	34	19	2	13	58,024
August	32	14	4	14	43,943
September	43	24	2	17	43,945
October	45	21	3	21	69,877
November	39	21	2	16	52,770
December	28	18	2	8	50,447
Total	444	258	25	*161	666,240

*Includes 1 service well.

WESTERN KENTUCKY

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	58	39	2	17	110,312
February	27	13	2	12	44,832
March	50	26	2	22	83,620
April	39	17	2	20	58,211
May	30	18	2	10	46,506
June	67	37	2	28	89,658
July	44	19	2	23	73,887
August	45	17	4	24	72,170
September	50	25	2	23	51,531
October	54	23	3	28	82,128
November	50	23	2	25	74,756
December	37	18	2	17	72,295
Total	551	275	27	*249	859,906

*Includes 1 service well.

WESTERN KENTUCKY

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Adaburg	2	0	0	2	0
Aetnaville	6	5	0	1	82
Bells Run	10	3	0	7	26
Birk City	21	9	0	12	187
Buford	31	20	0	11	419
Cane Run	9	5	0	4	172
Corydon, East	2	0	0	2	0
Dean	5	4	0	1	150
Dixie	49	21	17	11	1,946
Dundee	2	0	1	1	0
Fordsville	5	2	0	3	6
Friendship Chapel	6	2	0	4	10
Glenville	6	2	0	4	17
Haynesville	4	1	0	3	3
Henderson	12	10	0	2	2,350
Hitesville	18	14	0	4	6,628
Huntsville	40	30	0	10	322
Livermore	4	2	0	2	13
Lyonia	2	0	0	2	0
Miller	2	1	0	1	2
Mt. Zion	12	6	0	6	112
Panther	12	8	0	4	378
Piney	2	0	0	2	0
Poole	45	35	0	10	4,579
Powell's Lake	13	12	0	1	1,158
Quality	2	0	0	2	0
Robards	3	1	0	2	20
Red Hill	4	3	0	1	75
Roby	3	0	0	3	0
Robinsonville	3	2	0	1	47
Stanley	6	0	1	5	0
Silver City	2	0	0	2	0
Smith Mills	8	5	0	3	1,540
Uniontown	14	13	1	0	962
Utica	18	13	0	5	657
Waverly	7	5	0	2	344
Wilson	7	4	0	3	303
Whitesville	2	1	0	1	75
Miscellaneous	45	19	5	21	462
Total	444	258	25	161	23,045

WESTERN KENTUCKY

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Butler	5	1	0	4	4,243
Crittenden	7	0	0	7	8,804
Daviess	11	3	1	7	14,594
Henderson	37	8	1	28	78,637
Hopkins	7	0	0	7	14,642
McLean	7	3	0	4	12,432
Muhlenberg	6	0	0	6	12,178
Ohio	2	0	0	2	2,134
Union	11	2	0	9	22,807
Warren	3	0	0	3	3,747
Webster	4	0	0	4	8,152
Miscellaneous	7	0	0	7	11,296
Total	107	17	2	88	193,666

PENNSYLVANIA

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	257	134	15	108	408,425
February	256	132	14	110	421,205
March	274	145	18	111	449,365
April	329	168	17	144	520,021
May	336	162	33	141	578,071
June	292	149	18	125	465,455
July	315	164	23	128	501,804
August	318	162	28	128	510,939
September	312	161	27	124	497,333
October	314	158	32	124	511,992
November	310	149	29	132	497,591
December	271	137	17	117	420,066
Total	3,584	1,821	271	*1,492	5,782,267

*Includes — service wells.

NEW YORK

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	125	72	0	53	179,190
February	115	67	1	47	166,442
March	149	75	3	71	216,769
April	173	85	4	84	258,785
May	124	62	0	62	173,216
June	118	59	0	59	164,893
July	151	82	0	69	220,559
August	137	67	0	70	190,178
September	127	63	0	64	183,381
October	107	54	0	53	149,906
November	110	55	0	55	154,024
December	108	54	0	54	155,830
Total	1,544	795	8	*741	2,213,173

*Includes 735 service wells.

WEST VIRGINIA

Total Completions by Months

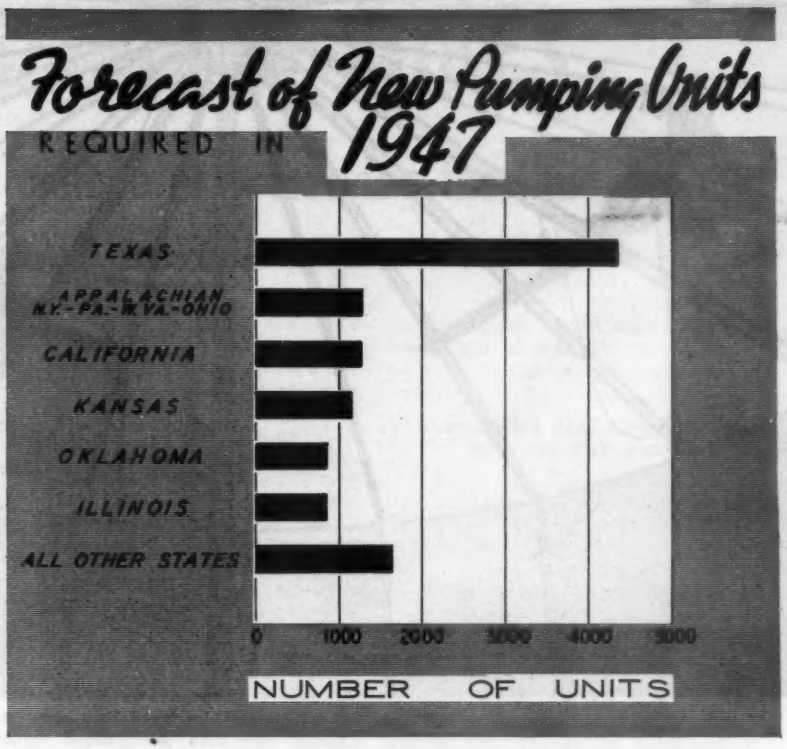
Month—	Comp.	Oil	Gas	Dry	Footage
January	53	10	33	10	116,059
February	53	2	42	9	140,924
March	67	6	51	10	161,193
April	51	6	39	6	153,492
May	60	4	45	11	156,455
June	65	5	48	12	195,891
July	50	7	32	11	127,862
August	79	11	56	12	206,961
September	80	13	57	10	199,553
October	78	12	55	11	224,705
November	65	10	44	11	176,194
December	54	12	33	9	129,843
Total	755	98	535	122	1,989,132

Operators' Forecast of New Pumping Units Required in 1947

Need foreseen for total of 13,120 new units—slightly less than the 1946 total

THE industry expects to put 13,120 wells on the pump in 1947, and will require 11,387 new pumping units to take care of this work, according to replies made by operators in response to The Oil and Gas Journal questionnaires.

The number of wells to go on the pump during 1947 is expected to be slightly lower than in 1946, about 9 per cent, or 1,265 units. About one-half of this drop is anticipated in Pennsylvania and New York, where the operators state that 1947 prospects do not look too favorable, because of the price situation. This is secondary-recovery and stripper-well area, which has been operating under a 75 cents per barrel government subsidy. The price advances have been deducted from the government subsidy, and as the price has not increased even the full 75 cents per barrel, these producers have had no net increase in revenue per barrel. With higher material and labor costs, their present mood is one of curtailing their 1947 drilling program, and this immediately affects their schedule of pumping-equipment requirements.



THE OIL AND GAS JOURNAL PUMPING SURVEY

	Wells on pump in 1946	Wells to go on pump in 1947	New pump units required for 1947	Per cent of new units
Arkansas	66	91	110	1.0
California	1,036	1,260	1,280	11.2
Colorado	31	60	60	0.5
Illinois	1,335	850	840	7.4
Indiana	330	410	370	3.3
Kansas	960	940	1,150	10.1
Kentucky	333	202	140	1.2
Louisiana	254	273	247	2.2
Northern	128	152	134	1.2
Southern	126	121	114	1.0
Michigan	140	166	104	0.9
Mississippi	44	42	40	0.4
Montana	174	172	162	1.4
New Mexico	289	322	290	2.5
New York	795	635	315	2.8
Ohio	330	350	260	2.3
Oklahoma	1,270	1,140	860	7.6
Pennsylvania	1,821	1,365	680	6.0
Texas	4,982	4,581	4,345	38.1
Eastern	1,270	1,200	923	8.1
North Central	1,657	1,578	1,530	13.4
Gulf and Southwest	780	460	610	5.4
Panhandle	243	215	186	1.6
West	1,032	1,128	1,096	9.6
West Virginia	98	137	28	0.2
Wyoming	97	124	106	0.9
Total United States	14,385	13,120	11,387	100

Fewer Pumpers in Texas

In Texas, operators have scheduled about 401 fewer wells to go on pumping operation in 1947 than in 1946. However, there are many uncertainties in anticipating at this time the number of wells likely to be put on pump throughout the year. A 10 per cent error in the estimate, on the conservative side, would wipe out this deficit. An increase in pumping-unit requirements for West Texas is forecast, and these on the average, are apt to be fairly heavy units for reasonably deep wells, handling substantial quantities of water.

California operators have scheduled 1,260 wells to go on the pump in 1947, and on net balance, replacement equipment needs are expected to add slightly to this total.

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QUICK FREEZING OF CORES

A practical method of preserving the fluid content

by John D. Wisenbaker

FOR many years cores have been cut from oil and/or gas bearing formations and analyzed for porosity, permeability, oil and water saturation, and other properties in order to obtain data for application toward (1) better well completion, (2) more accurate estimation of recoverable oil and gas, and (3) more efficient production of petroleum reservoirs.

The pore space in an oil-bearing formation is normally filled with interstitial (connate) water, and oil with its dissolved gas. During drilling operations where water-based mud is the drilling fluid, a water front precedes the cutting face of the bit and displaces formation oil, reducing the oil saturation to a quantity normally found after effective water drive. The pore space in a core, before it is raised from the bottom of the well, is filled with oil and its dissolved gas, connate water, and drilling water, the latter of which has displaced formation oil. As the core is raised to the surface, the gas in solution in the residual oil expands as pressure declines and forces part of the drilling fluid from the pore space of the core. On arrival at the surface the pore space is occupied by residual oil, connate water, drilling fluid, and void space created by the expanding gas.

The above process is sufficiently consistent for any fixed set of reservoir conditions so that measurements for oil and water saturation, permeability, and porosity made on a fresh core immediately after it reaches the surface, can be used to interpret accurately the type and quantity of production to be expected and, together with other data, to calculate accurately the amount of recoverable oil and/or gas in the reservoir.

Upon reaching the surface, the core, due to capillarity, ordinarily commences to absorb water from the drilling mud, and, on exposure to the atmosphere, starts losing oil and water by evaporation. These effects result in a substantial deterioration in value of a delayed analysis.

For several years it has been common practice to place a portable laboratory at the well site in order to provide immediate analysis on fresh cores. This practice occupies the full time of a field crew, and limits the service of each laboratory to one well at a time.

The author graduated from Southern Methodist University in 1939 with a B.S. degree in mechanical engineering. He was employed by Core Laboratories, Inc., as a field engineer in core analysis and bottom-hole sample and pressure work until September 1942. At that time he entered the U. S. Navy where he served 41 months as an engineering officer in the submarine service. Since his release in January 1946, he has been employed in Core Lab's research department and has worked on relative permeability and capillary pressure apparatus and the development of new techniques and equipment relative to petroleum reservoir engineering.

A research project was initiated by Core Laboratories, Inc., for the development of a method to provide the same reliable analysis on fresh cores without the necessity of having a field laboratory at the well site except in cases where immediate results of analysis are needed to direct coring schedules or to aid in well completion.

General

The successful results of this research project for a method for preserving the fluid content of fresh cores by quick freezing is described in this article.

The application of quick freezing was believed to be a practical method of preserving the fluid content of cores, because freezing effectively anchors each particle of oil and water in the particular part of the core it occupies on being taken from the well. Some concern was felt, however, over what effect quick freezing might have on permeability, porosity, and other physical characteristics of oil-and-gas-bearing rock. A drastic alteration of the sample was not expected because the particles of water are dispersed throughout the core and the expansion due to freezing is cushioned by the oil and gas content of the core. Porosity was not expected to change appreciably because even with considerable internal fracturing, which might cause a substantial change in permeability, no solid matter would be added or removed.

Consolidated Sand Cores Fully Saturated with Water

A maximum change in permeability and porosity was expected by quick freezing samples fully saturated with water because the expanding ice would not have void space, which is usually present in fresh cores taken from oil-or-gas-bearing formations, to accommodate any appreciable expansion.

With these ideas in mind, samples of sand were selected from several oil fields for the purpose of determining the change in permeability and porosity caused by quick freezing samples fully saturated with water.

Twenty-five cylindrical samples of consolidated sand, 2 cm. in diameter and approximately 2 cm. long, with a permeability range of from a fraction of a millidarcy to several hundred millidarcys, were selected. The samples were extracted by posi-

TABLE 1—PERMEABILITY AND POROSITY VALUES MEASURED ON IDENTICAL CONSOLIDATED SAND SAMPLES FULLY SATURATED WITH WATER BEFORE AND AFTER QUICK FREEZING

	Permeability in md.		Porosity, per cent	
Sample	Before freezing	After freezing	Before freezing	After freezing
1	138	164	19.4	19.9
2	4.50	8.93	19.1	20.5
3	335	352	16.3	16.5
4	3.60	7.06	17.8	19.1
5	5.00	7.83	16.5	17.0
6	5.36	9.30	19.2	20.1
7	117	132	23.0	23.5
8	36	38	17.2	17.4
9	15	17	14.3	14.6
10	450	457	16.8	16.9
11	25	27	13.1	13.3
12	151	160	21.1	21.2
13	303	313	18.7	18.6
14	101	103	14.4	14.9
15	557	561	20.6	20.6
16	921	940	21.9	21.7
17	113	120	20.3	20.5
18	36	54	23.2	23.4
19	14	14	11.4	11.4
20	33	36	23.0	23.0
21	1.32	1.40	04.5	04.8
22	10.1	10.6	14.9	14.9
23	2.63	4.40	16.3	16.0
24	.099	.110	03.3	03.7
25	16	32	24.7	24.2
Average	136	143	17.24	17.51

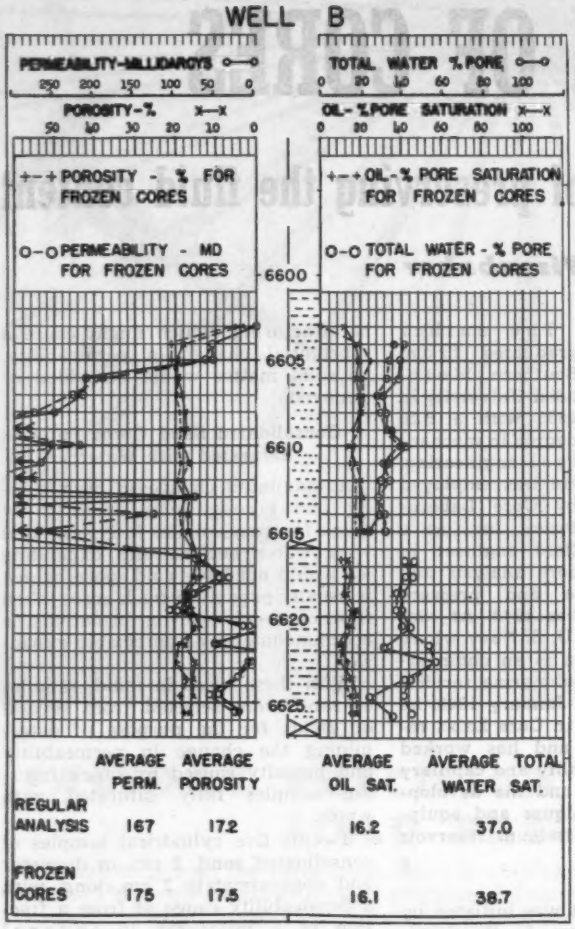

Fig. 1

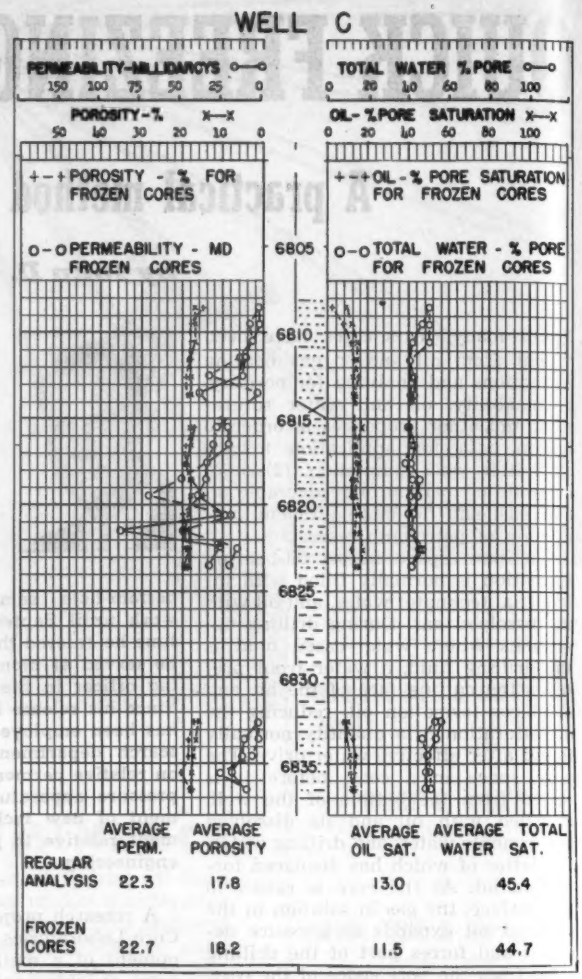

Fig. 2

tive flushing with carbon tetrachloride and dried at 280° F. Permeability measurements were made by direct measurement of rate of air flow. Samples were accurately weighed, evacuated, saturated with distilled water and reweighed for porosity determinations. Care was taken at all times to protect the saturated samples from the atmosphere by keeping them sealed in weighing bottles. The samples were wrapped in a single layer of paper and covered with several inches of dry ice and allowed to remain frozen for 16 hours. The samples were removed from the dry ice, thawed, and dried. Permeability and porosity determinations were again made in the manner already described.

The porosity and permeability of each sample measured before and after quick freezing are shown in Table 1.

Sand Cores Partially Saturated with Gas

Most cores from oil-and-gas-bearing formations reach the surface partially saturated with gas. In view of this fact, it was thought advisable to determine the change in permeability and porosity caused by quick freezing samples of this type. Thirteen consolidated sand samples were selected from various oil fields for this purpose.

Permeability and porosity measurements were made as described earlier. Samples were saturated with water, weighed, and exposed to the atmosphere until part of the water in the pore space of the sample had evaporated. Gas saturations were determined by weighing. The cores were then frozen for approximately 20 hours, thawed and dried, and permeability measurements were again made. Samples were resaturated and porosity determinations were made in the usual manner.

The above procedure was repeated twice with decreasing gas saturations in an effort to compare permeability and porosity values before and after quick freezing for several gas saturations.

No appreciable change of porosity was observed with the completion of the first set of porosity measurements on samples partially saturated with gas, as was the case on the first 25 samples which were fully saturated with water. Consequently, porosity was not measured during the last two experiments. The gas saturation was zero on the last experiment.

Tabular data for these measurements are shown in Table 2.

Permeability values from Tables 1 and 2 were grouped according to permeability range and gas saturation, and average permeability values were calculated for samples with more and less than 10 md. for various average gas saturations. These data are shown in Table 3.

Average values in Table 3 indicate the following changes may be expected by quick freezing core samples partially or fully saturated with water.

1. Samples fully saturated with water and with permeability less than 10 md. show an average increase in permeability of 47.3 per cent.

2. The permeability of samples with less than 10 md. and with 10.9 per cent average gas saturation show an average increase of 1.86 per cent.

TABLE 2—PERMEABILITY AND POROSITY VALUES MEASURED ON IDENTICAL SAMPLES OF CONSOLIDATED SAND PARTIALLY SATURATED WITH GAS BEFORE AND AFTER QUICK FREEZING

Sample No.	Gas saturation per cent	Permeability in md. Before freezing	Permeability in md. After freezing	Porosity, per cent Before freezing	Porosity, per cent After freezing
1	55.8	2.68	2.67	9.48	9.32
2	64.0	3.77	4.15	8.29	8.22
3	55.1	3.51	3.76	9.55	9.50
4	47.5	29	28	11.50	11.48
5	45.2	7.05	6.58	10.45	10.44
6	25.4	102	99	21.80	21.80
7	27.5	325	338	21.80	21.80
8	36.4	42	43	13.76	13.60
9	27.9	80	79	18.61	18.50
10	44.6	188	198	14.19	14.15
11	24.9	1,529	1,542	21.00	20.70
12	29.5	100	101	18.70	18.50
13	32.0	1,839	1,970	19.20	19.30
Average	39.7	324	340	15.25	15.18
1	9.75	2.67	2.59	....	....
2	11.2	4.15	3.85	....	....
3	11.8	3.76	3.92	....	....
4	11.7	28.5	29	....	....
5	10.9	6.58	7.12	....	....
6	15.5	99	99	....	....
7	14.6	338	361	....	....
8	23.0	43	45	....	....
9	17.8	79	83	....	....
10	9.15	198	213	....	....
11	16.3	1,542	1,595	....	....
12	18.7	101	104	....	....
13	17.2	1,970	2,010	....	....
Average	14.4	340	351	....	....
1	0	2.59	2.82	....	....
2	0	3.85	3.90	....	....
3	0	3.92	5.25	....	....
4	0	29	30	....	....
5	0	7.12	8.00	....	....
6	0	99	102	....	....
7	0	361	359	....	....
8	0	44	44	....	....
9	0	83	83	....	....
10	0	213	217	....	....
11	0	1,595	1,427	....	....
12	0	104	101	....	....
13	0	2,010	2,030	....	....
Average	0	351	340	....	....

3. Samples fully saturated with water with permeability of more than 10 md. show an average increase in permeability of 0.35 per cent.

4. Samples with more than 10 md. and average gas saturations of 16.0 and 32.8 per cent show an average increase in permeability of 3.06 and 2.54 per cent, respectively.

The much smaller effect of freezing on samples with over 10 per cent gas saturation may possibly be due to the fact that water expands approximately 9 per cent on freezing.

Porosity values from Tables 1 and 2 were grouped according to gas saturation. All samples with no gas saturation were averaged as a group, and all samples having gas saturation were averaged as a separate group. The average porosity values for each group before and after freezing are shown in Table 4.

A study of this table indicates:

1. Porosity on samples with zero gas saturation shows an average increase of 1.74 per cent of porosity.

2. Porosity on samples with an average gas saturation of 38 per cent shows an average decrease of 0.46 per cent of porosity.

Freezing Fresh Sand Cores

No appreciable change in permeability and porosity was observed from determinations made on samples partially and fully saturated with water before and after quick freezing. It was then decided to compare results of permeability, porosity, oil, and water-saturation measurements obtained from well-site analysis on fresh cores with results obtained on samples selected as nearly representative as possible to those analyzed at the well after they had been frozen for an appreciable length of time.

Four wells were selected for this purpose. One is located on the Texas Gulf Coast, two in the Mid-Continent area, and one in California.

It was thought advisable to split each core through the longitudinal axis, use one-half for the well-site analysis and freezing the other half for subsequent analysis.

The first well analyzed was located in the Texas Gulf Coast area. The wire-line cores taken in this case were too small to permit the selection of two samples from the same piece of core. Adjacent samples were therefore selected from the same foot of core. One part was analyzed in the field laboratory immediately after being taken from the well. The adjacent part was cleaned of drilling mud and promptly wrapped in a single layer of paper, on which was marked the depth from which it was selected, placed in an insulated box, covered with several inches of dry ice and allowed to remain frozen for approximately 20 hours. Twelve samples were frozen in this manner. All samples were removed from the freeze box at the same time and exposed to the atmosphere. Frost, which quickly collected on the surface of each sample, was removed from pieces of core selected for water determinations by brushing with a fiber brush. After approximately half the samples were prepared for analysis the frost previously noticed on the surface of the remaining samples was observed to have thawed, indicating that the temperature of the outside of each sample had risen above the freezing point. The remaining samples selected for water content determination were wiped with a dry cloth but a considerable amount of water was absorbed by the partially thawed surface of each sample. The effects of water thus collected by the last several samples was quite noticeable in the final analysis results. Total water saturation measured on frozen and nonfrozen samples is in fairly close agreement for the first few samples, but diverges in the last samples.

Wells B and C, located in the Mid-Continent area, were cored with conventional barrels which cut cores 3½

TABLE 3—A COMPARISON OF AVERAGE PERMEABILITY BEFORE AND AFTER QUICK FREEZING FOR SAMPLES WITH VARIOUS AVERAGE GAS SATURATIONS

Permeability range—	Total No. samples	Average gas sat., % pore	Avg. perm. in md. Before freezing	Avg. perm. in md. After freezing	Per cent change
Permeability less than 10 md.	11	0	3.86	5.36	47.3
Permeability more than 10 md.	27	0	293	294	.35
Permeability less than 10 md.	4	10.9	4.29	4.37	1.86
Permeability more than 10 md.	9	16.0	489	504	3.06
Permeability less than 10 md.	4	55	4.25	4.29	.94
Permeability more than 10 md.	9	32.8	512	525	2.54

TABLE 4

A Comparison of Average Porosity Values Before and After Quick Freezing Consolidated Sand Samples Fully and Partially Saturated With Water

No. of samples	Avg. gas sat.	Porosity, % Pore Before freezing	Porosity, % Pore After freezing	% change
23	0	17.21	17.51	1.74
13	39.7	15.25	15.18	—.46

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in. in diameter. In both cases a piece of core approximately 4 in. long was selected from each foot, carefully cleaned of drilling mud, and split through the longitudinal axis. One-half the core was analyzed immediately at the well site in a portable field laboratory for permeability, porosity, oil and water saturation, and the other half was wrapped in a single layer of paper and placed in an insulated box beneath several inches of chipped dry ice. Care was taken to mark the correct depth represented by each sample on the sample wrapper. The particular section of each sample selected for permeability, porosity, oil and water saturation for the well site analysis was suitably marked opposite the point selected on the half taken for freezing in order to assure representative samples for the second analysis.

The frozen samples from wells B and C were analyzed approximately 30 hours after freezing. In each case, laboratory equipment and technique employed were, as nearly as possible, identical to that used for well site analysis. Cores were removed from the freeze box singly and prepared for analysis, thus preventing any partial thawing of the sample surface. Care was taken to remove all frost from samples selected for the determination of water saturation.

Values for permeability, porosity, oil and total water saturation are plotted versus depth for the well site analysis and the analysis of the frozen samples in Figs. 1 and 2. Average data is shown at the bottom of each figure.

Samples from well D were selected from a well located in California in the same manner as described above. The cores were frozen at the well site and packed with approximately 75 lb. of dry ice in an insulated box, then shipped to a Dallas core-analysis laboratory where they were kept frozen for 30 days. The samples were then removed from the freeze box and analyzed as described.

In Table 5 is a summation of average data for the four wells from which cores were frozen for subsequent analysis and comparison with results from well-site analysis.

The samples selected for freezing from well A are not thought to be representative in comparison to those analyzed at the well because the small-diameter core made it necessary to select the sample for freezing immediately below or above the one used for well-site analysis. Also, as pointed out earlier in this paper, the surface of the last several samples was allowed to thaw and absorb water collected from the atmosphere, thereby increasing the water saturation beyond the amount which normally would have been measured.

The results from the analysis of frozen cores selected from wells B, C, and D are in a very close agreement with values measured by well-site analysis.

Summary

Permeability and porosity measurements have been made on consolidated sand cores, selected from various oil fields, before and after quick freezing. The measurements were made on samples with gas saturation varying from zero to approximately 55 per cent.

TABLE 5—A COMPARISON OF AVERAGE DATA FOR PERMEABILITY, POROSITY, OIL AND WATER SATURATION FOR FOUR WELLS TAKEN FROM WELL-SITE ANALYSIS AND FROM SUBSEQUENT ANALYSIS DATA FOR FROZEN SAMPLES

Well designation	No. samples analyzed	Average perm.		Average porosity		Average oil sat.		Av. total water saturation	
		Regular analysis	Frozen samples	Regular analysis	Frozen samples	Regular analysis	Frozen samples	Regular analysis	Frozen samples
Well A	12	111	125	24.1	26.5	12.6	11.8	53.6	58.2
Well B	22	167	175	17.2	17.5	16.2	16.1	37.0	38.7
Well C	20	22.3	22.7	17.8	18.2	13.0	11.5	45.4	44.7
Well D	37	26.0	24.9	19.1	19.5	23.2	24.2	41.2	38.7
Over-all weighted average	..	70.5	73.9	19.0	19.7	17.9	17.8	42.7	42.6

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PROGRESS IN METALS

by W. L. Nelson
Consulting Engineer

Sucker Rods for Corrosion Fatigue

ALTHOUGH the ductile tough nickel steels have long been recognized as valuable in resisting fatigue or particularly combined corrosion and fatigue, copper has not been employed much. In general, copper alloys itself with steel in much the same manner as nickel and should have somewhat the same effects. In the survey made by this department in 1940 (Metals in Production, Sucker Rods and Couplings, The Oil and Gas Journal, May 2, 1940, page 52) copper is listed as a component of only 1 sucker rod whereas nickel is mentioned 7 times among the total of 17 sucker-rod compositions.

Recently a special sucker rod which contains 1.5 per cent copper along with other elements has been marketed. The composition of this alloy steel as well as that of a 4620 nickel molybdenum steel are shown on this page.

HEAVY-DUTY SUCKER RODS FOR CORROSIVE WELLS*

Composition, per cent—	"Reliance"	Type 5
Carbon	0.07/0.13	0.18/0.23
Manganese	0.20/0.50	0.70/0.90
Silicon	0.20/0.35	0.20/0.35
Nickel	3.00/3.50	1.65/2.00
Copper	1.45/1.65	.....
Molybdenum	.....	0.20/0.30
Typical mechanical properties—		
Yield point, psi.	75,000	70 000
Tensile strength, psi.	95,000	88,000
Elongation in 2-in. (%)	30	35
Reduction of area (%)	60	65
Brinell hardness	183	174
Izod impact, ft. lb.	90	80
Endurance limit, psi.—		
Air	64,000	55,000
Salt water	36,000	33,000
Hydrogen sulfide	24,000	23,000

*D & B Division of Emsco Derrick & Equipment Co.

The "Type 5" variety is recommended for corrosive conditions but severe corrosion calls for the 1½ per cent copper "Reliance" steel. Both rods are heat treated full length and the copper nickel steel is precipitation hardened at a low temperature to avoid warping and scaling. The carbon content of this steel is also kept low (.07-.13) to assist in corrosion resistance.

Creep Strength of Pipe Still Tubes

TABLE 1 lists creep strengths of the widely used pipe-still tube steels. Data were obtained from many tube manufacturers including United States Steel Corp., Republic Steel Co., National Tube Co., Babcock & Wilcox Co., and Timken Roller Bearing Co. Thus some of the figures are an average obtained from several sources. The figures are for 1 per cent creep in 10,000 hours (1 year and 1 month) and those in parenthesis are for 100,000 hours (11 years, 3½ months).

TABLE 1—CREEP STRENGTH (PSI.) OF COMMON PIPE-STILL TUBE STEELS—1 PER CENT CREEP IN 10,000 HOURS AND IN 100,000 HOURS IN PARENTHESIS

	Kind of steel—	Chemical analysis, per cent— Chromium	Silicon	Molybdenum	Nickel	Others	800	900	1,000	1,100	1,200	1,300	Higher temp.
1.	Carbon	...	0.25	..	...	...	22,500 (16,000)	13,200 (10,500)	5,700 (2,400)	1,800 (800)	600 (290)	....	....
2.	½ Moly	...	0.25 max.	0.5	...	...	30,000 (23,500)	19,000 (13,000)	12,500 (6,000)	5,200 (1,800)	21,000 (900)	....	....
3.	1 Moly	...	0.25 max.	1.0	...	...	32,000 (25,000)	25,500 (11,500)	11,300 (5,400)	5,300	1,900	....	....
3A.	1¼ Chrome	1.25	0.75	0.5	...	...	29,000 (20,000)	25,500 (16,000)	22,000 (13,000)	6,800 (4,300)	3,950 (1,950)	....	....
4.	2 Chrome	2.0	0.5 max.	0.5	...	...	29,000	19,000 (14,500)	10,500 (6,000)	6,000 (3,700)	3,000 (1,300)	....	....
5.	2 Chrome silicon	2.0	1.2	0.5	...	...	....	14,000 (10,000)	7,800 (5,700)	4,600 (2,400)	3,700 (1,400)	....	....
6.	2¼ Chrome	2.25	0.75 max.	0.5	...	...	25,000	18,000	9,000	5,300	2,500	1,500	....
7.	2¼ Chrome moly	2.25	0.5 max.	1.0	...	...	....	....	11,000 (6,400)	7,400 (3,600)	4,450 (2,150)	....	....
8.	3 Chrome silicon	3.0	1.2	0.5	...	...	....	....	8,700 (5,400)	5,100 (2,500)	3,550 (1,800)	....	....
9.	3 Chrome moly	3.0	0.5 max.	1.0	...	...	....	....	11,000 (6,400)	8,000 (4,900)	....	....	....
10.	5 Chrome	5.0	0.5 max.	0.5	...	...	25,000	17,000 (13,000)	9,600 (7,400)	5,400 (2,800)	2,600 (1,300)	1,700 (800)	....
11.	5 Chrome with titanium	5.0	0.5 max.	0.5	...	(Ti)	26,000	18,000	12,000	6,000	3,300	1,500	....
12.	5 Chrome with aluminum	5.0	0.5 max.	0.5	...	(0.5 Al)	....	....	7,600 (4,400)	4,500 (2,500)	3,150 (1,500)	....	....
13.	5 Chrome silicon	5.0	1.5	0.5	...	...	....	....	8,700 (5,450)	4,800 (2,600)	2,900 (1,600)	1,450 (920)	....
14.	5 Chrome moly	5.0	0.75 max.	1.0	...	...	....	....	....	4,900 (2,250)	2,800 (1,600)	1,800 (800)	....
15.	8 Chrome moly	8.0	0.5 max.	1.0	...	...	....	....	12,000	6,000	2,500	1,500	....
16.	9 Chrome moly	9.0	0.5 max.	1.1	...	...	....	33,200 (24,700)	11,600 (5,800)	7,000 (3,800)	2,300 (1,600)	....	....
17.	12 Chrome*	12.0	0.75 max.	*0.5	...	...	.....	.....	13,000	5,000	2,300	1,450	....
18.	15 Chrome	15.0	0.5 max.	..	...	...	.....	.....	10,000	5,000	....	1,400	....
19.	17 Chrome	17.0	0.75 max.	..	...	...	.....	.....	8,500	5,000	2,000	1,450	....
20.	18-8 Chrome nickel	18.0	0.75 max.	2.5	8.0	...	.....	.....	25,000	....	18,000	....	1,650 @ 1,500
21.	18-8 Chrome nickel	18.0	0.75 max.	..	8.0	(‡)	32,000 (25,300)	24,500 (18,000)	18,000 (11,100)	12,100 (7,500)	7,100 (4,300)	3,600 (1,600)	1,300 @ 1,500 ....
22.	25-12 Chrome nickel	25.0	2.0 max.	..	12.0	...	.....	.....	17,000	13,000	....	4,800	850 @ 1,500
23.	25-20 Chrome nickel	25.0	0.75 max.	..	20.0	...	.....	.....	.....	.....	7,400 (5,400)	†3,300 †(2,800)	1,100 @ 1,600 (800) @ 1,600

*Same creep strength without molybdenum. †At 1,350° F. ‡With titanium creep strength is same.

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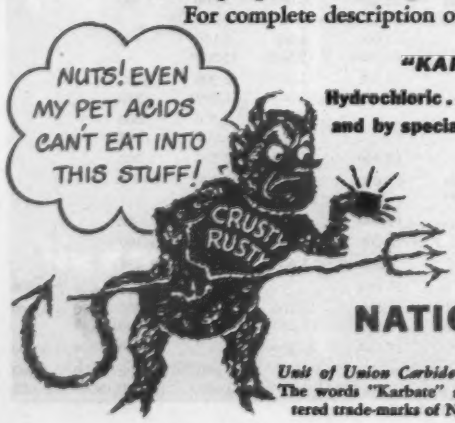

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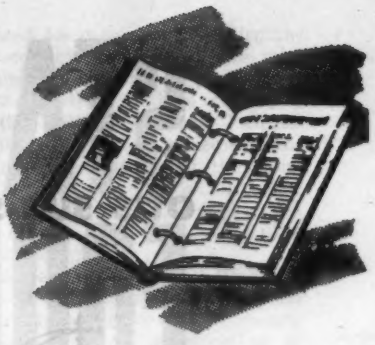

Pipe-Still Outlet Temperature

CONDITIONS

1. Capacity is based on cold velocity (60° F.) in transfer line.

2. Length of transfer line is actual length plus equivalent length of fittings.

3. Based on so-called atmospheric towers at 1-15 psig. although it probably gives reasonable results up to 60 psig.

4. Stock A has a true boiling slope of 4.0 (gas oil, topped crude, raw naphthas, benzenes).

5. Stock B has a true boiling slope of 7.0 (mainly crude oils).

6. Use.—Compute length of transfer line and cold velocity. Read Δt from still outlet to vaporizer section of tower.

7. Pipe-still outlet temperature equals vaporizer temperature plus Δt.

APPROXIMATE TEMPERATURE DROP (Δt) FROM PIPE-STILL OUTLET TO VAPORIZER, °F.

20% VAPORIZED IN TOWER

Equivalent length of transfer line-ft.	Kind of stock	Cold Vel. (60° F.) IN LINE ft./sec. 2	3	4	5	6	7	8
20	A	..	..	..	..	..	..	4
	B	..	..	..	..	..	..	4
40	A	..	..	..	..	5	10	15
	B	..	..	..	..	5	12	18
60	A	..	..	1	6	12	17	21
	B	..	..	1	8	14	20	25
80	A	..	..	3	11	17	22	25
	B	..	..	3	13	20	25	28
100	A	..	..	6	14	20	24	27
	B	..	..	7	17	24	29	32
150	A	..	6	14	21	26	30	..
	B	..	7	16	23	29	34	..
200	A	1	11	19	24	28	32	..
	B	1	13	22	27	32	36	..

40% VAPORIZED IN TOWER

Equivalent length of transfer line-ft.	Kind of stock	Cold Vel. (60° F.) IN LINE ft./sec. 2	3	4	5	6	7	8
20	A	..	..	..	..	5	10	14
	B	..	..	..	..	5	11	16
40	A	..	..	5	10	15	19	22
	B	..	..	5	13	19	25	30
60	A	..	2	10	16	20	24	27
	B	..	2	11	19	27	32	36
80	A	..	4	14	19	23	26	29
	B	..	5	16	25	32	36	39
100	A	..	11	17	22	26	29	31
	B	..	14	23	29	35	39	42
150	A	3	14	21	26	30	33	35
	B	3	18	29	35	39	43	46
200	A	7	18	25	30	33	35	..
	B	8	23	33	39	42	45	..

60% VAPORIZED IN TOWER

Equivalent length of transfer line-ft.	Kind of stock	Cold Vel. (60° F.) IN LINE ft./sec. 2	3	4	5	6	7	8
10	A	..	..	..	..	..	..	6
	B	..	..	..	..	..	..	6
20	A	..	..	..	..	8	13	18
	B	..	..	..	1	9	17	23
40	A	..	..	8	14	19	23	26
	B	..	1	10	18	25	30	35
60	A	..	..	14	19	24	27	31
	B	..	6	17	24	31	36	41
80	A	1	10	17	22	27	31	35
	B	1	13	22	29	35	40	45
100	A	2	13	20	25	30	34	37
	B	2	16	26	33	38	44	48
150	A	6	17	25	30	34	38	40
	B	6	21	31	37	42	46	50
200	A	10	21	28	33	36	40	43
	B	13	26	35	41	45	48	53

80% VAPORIZED IN TOWER

Equivalent length of transfer line-ft.	Kind of stock	Cold Vel. (60° F.) IN LINE ft./sec. 2	3	4	5	6	7	8
10	A	..	..	..	..	1	3	6	11
	B	..	..	..	..	1	3	7	12
20	A	..	..	3	8	13	17	20
	B	..	1	3	10	16	21	26
40	A	..	..	11	17	21	24	26
	B	..	1	13	22	29	34	38
60	A	1	11	17	21	25	28	30
	B	1	14	23	30	35	40	44
80	A	2	13	20	24	27	30	32
	B	2	17	27	33	38	43	47
100	A	4	16	22	26	29	32	34
	B	5	20	30	36	41	45	49
150	A	10	20	26	28	32	34	..
	B	11	27	36	39	45	48	..
200	A	14	22	28	31	34	36	..
	B	17	31	40	45	48	50	..

No. 128 in a series by W. L. Nelson, professor of petroleum refinery engineering, University of Tulsa

STANDARD EQUIPMENT

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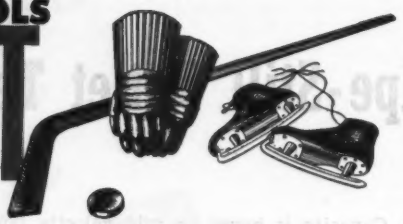

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MODERN Rotary DRILLING

Moving In

SPEED of moving a particular drilling rig to the location depends on road conditions, types of moving equipment used, and arrangement of loading and unloading operations. The efficiency of these operations, in turn, is influenced to a considerable degree by the extent of unitizing of the rig equipment and by the location layout. In general the moving operations and methods are well standardized by trucking contractors and operators using their own moving equipment. Some of the problems resulting from the size and complexity of a modern rotary rig as compared with the rig of an older type may be of interest.

Adequate moving equipment and power are not the only requirements brought about by the size and weight of a present-day rotary rig. Important also for elimination of confusion and waste of time are the sequence of bringing the equipment to the location, manner of placement, and elimination of secondary moving at the location. This requires working out of definite and detailed schedules. Design of the location layout which takes into consideration efficiency of unloading is an important factor. This will be commented on in the following installments.

A modern rotary rig is infinitely more complex than was the rig of 15 or 20 years ago. Included in the equipment comprising the rig are many items which are difficult to move, such as manifolds, small unitized equipment, portable pipe racks, steel stairways, etc. Improperly loaded, this equipment may be easily damaged. On the other hand it is difficult to make a proper load and at the same time segregate the equipment according to its functions so that it may be unloaded and placed properly at the location. Of help is employment of the so-called pipe skids, sometimes referred to as junk baskets. Their use is growing, some operators using several of such skids with each rig.

Fig. 1 shows construction of pipe skids built and used by a drilling contractor.[1] Made of 4½-in. drill pipe, the basket is substantial and is easily loaded on the truck. In addition to moving miscellaneous equipment, the skids are well adapted for moving of the dismantled derrick. In loading, the miscellaneous equipment performing certain related functions is grouped together. With standard location layout these groups of equipment are unloaded always at the same point at each location, in close proximity to the equipment's use. This reduces substantially the time of connecting up.

Unitized equipment. — Probably nothing else contributed so much toward improvement in efficiency of rigging up as introduction of unitized rig equipment. Considerable thought and ingenuity have been devoted to this problem during the past 10 or 15 years. Opportunities for improvement were ample, the only limiting factors being certain maximum dimensions and weights of the units, if the rig is still to be moved with the available moving equipment and over the public highways.

Equipment of a modern rotary rig is completely unitized. Pumps, engines, draw works, and elements of transmission are mounted on individual skids and moved as units. Steam, water, and mud piping is installed permanently on the units. Manifolds are moved completely made up. They are put in service by making of a few simple connections, the units they serve being provided with spacers to assure identical relative position of these units at each location.

Some of the details of unitizing of the rig equipment will be considered later in the series, in discussion of individual parts of the rig equipment.

Reference

1. L. D. Cain Drilling Co., Houston.

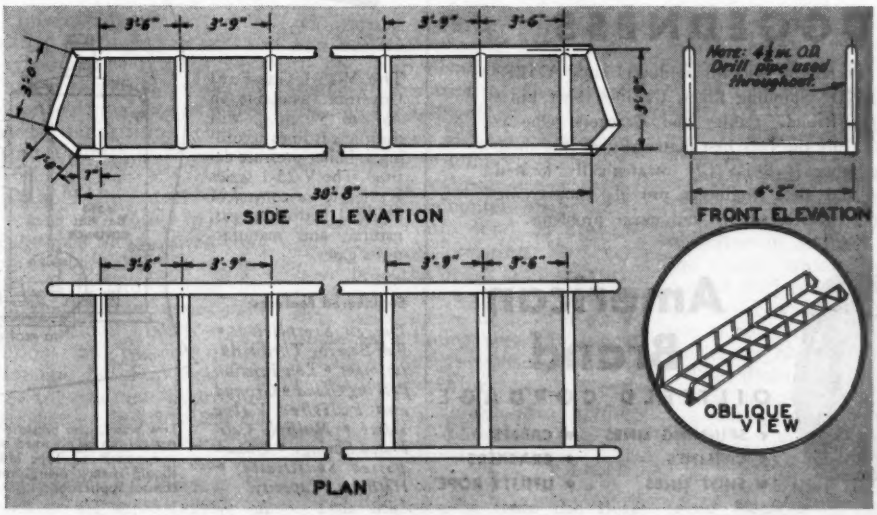
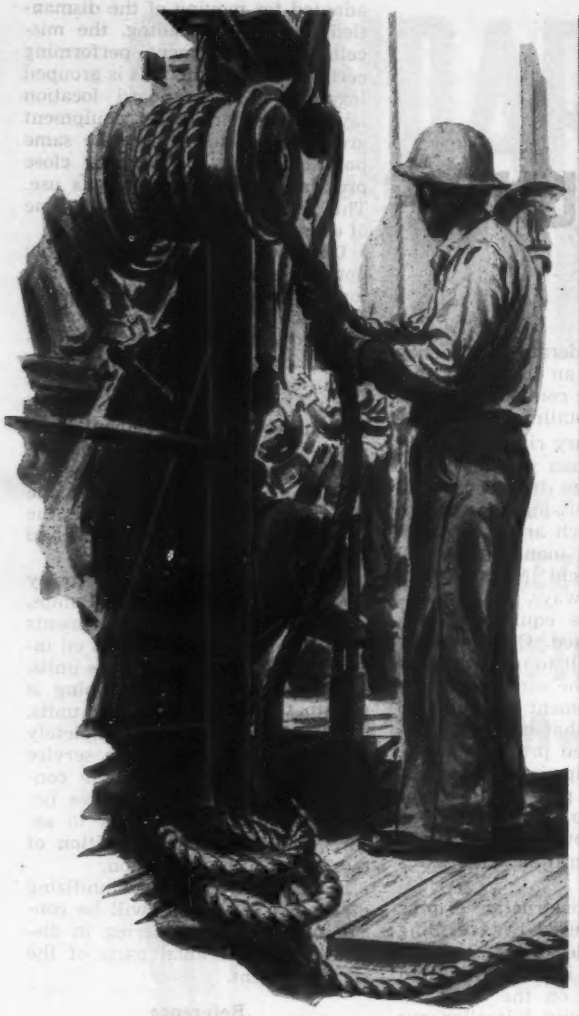


Fig. 1—Pipe skids for moving of miscellaneous equipment

No. 4 in a series by Joseph Zaba, petroleum engineer, Houston



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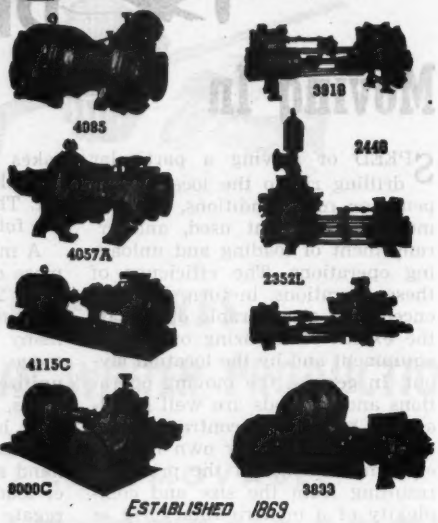

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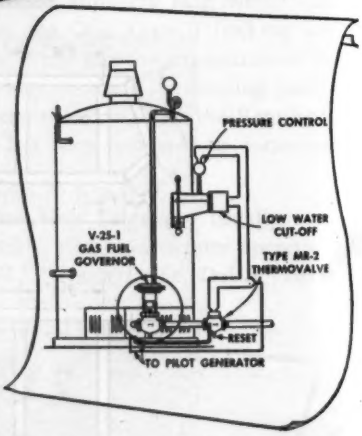

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ENGINEERING *fundamentals*

Water Treating: Embrittlement

INTERCRYSTALLINE cracking or caustic metal embrittlement occurs in boilers generally along riveted seams and at tube ends. Cracking of the metal may cause dangerous weakening of its structure and subsequent boiler failure. Because of the serious nature of this problem, intercrystalline cracking has been the subject of considerable research by several groups of investigators. From the research data secured to date, it is possible to briefly outline the causes of this difficulty as well as the treatment methods which have been developed to combat this problem.

Causes of Embrittlement

There are three factors necessary to produce intercrystalline cracking of boiler metal. These are:

1. Leakage of the boiler water must take place so as to permit escape of steam and concentration of the boiler water at the point of leakage.

2. The boiler metal must be subjected to high stress. This stress may be internal, resulting from cold working of the metal, or the stress may be external, due to expansion and contraction.

3. The concentrated boiler water must possess embrittling characteristics and chemically attack the boiler metal.

Leakage of boiler water from riveted seams or rolled-in tube ends can produce the required concentration of the boiler water. Investigations have shown that intercrystalline cracking is not produced at "normal" boiler-water concentrations, but that continued evaporation may build up local concentrations of sodium hydroxide to a range such as 75,000 to 500,000 p.p.m. which will cause intercrystalline cracking under stress and in the absence of an inhibitor.

Inasmuch as all three factors of leakage, stress, and embrittling character of the boiler water are required for the production of intercrystalline cracking, if it can be definitely shown that one of these three factors is absent, it can reasonably be assumed that the danger of embrittlement is nonexistent in that instance. The factor that can best be shown to be present or absent is the embrittling character of the boiler water.

No more authoritative ratio has yet been devised to take the place of the A.S.M.E. sulfate-carbonate ratio. Consequently, no authoritative prediction of embrittling or non-embrittling tendencies of a boiler water can be based simply on a chemical analysis of that boiler water.

Treatment Methods

In the course of the investigations made on the subject of intercrystalline cracking, many chemical materials have been considered, tried, and discarded as valueless in preventing this attack on boiler steel. No one material and no one single method of inhibiting embrittlement attack has been found suited to universal application. Several methods are enjoying widespread use at the present time and the data secured by each individual application aids in the general correlation of the research data on the subject.

Coordinated pH—phosphate control.—Some previous work has indicated that maintenance of a soluble phosphate content in the boiler water would tend to prevent embrittlement cracking. However, later research work and practical field experience have indicated that maintenance of soluble phosphate in a boiler water is not of value in the prevention of intercrystalline cracking.

However, a newer idea involving control of phosphate does offer considerable promise. This method of coordinated pH-phosphate control involves the simultaneous control of both the pH and the phosphate content of a boiler water in such a way that the pH value of the boiler water is never higher than the pH value of a trisodium phosphate solution of the same PO_4 content.

While present data indicate the coordinated pH-phosphate method provides a solution to the embrittlement problem for plants employing evaporated makeup water or for those using feed water composed almost entirely of condensate, this method is not applicable to the average industrial plant employing appreciable make-up.

Sodium nitrate.—Sodium nitrate, when used to overcome embrittling characteristics of a boiler water, is controlled on the basis of maintaining a definite sodium nitrate-sodium hydroxide ratio in the boiler water. The ratio desired will vary depending upon the operating pressure. The use of sodium nitrate has proved quite successful in the prevention of intercrystalline cracking in both laboratory tests and in practical operation in stationary and locomotive practice. Sodium nitrate may be fed continuously to the boiler feed water or direct to the boiler drum by the same means provided for the introduction of other treatment chemicals.

Tannins.—Quebracho tannin has been successfully applied to the prevention of intercrystalline cracking in many installations. Control is based on maintaining a definite tannin-sodium hydroxide ratio in the boiler water. A disadvantage entailed is that the boiler water may become so highly colored by the tannin that routine control analyses may be seriously hampered.

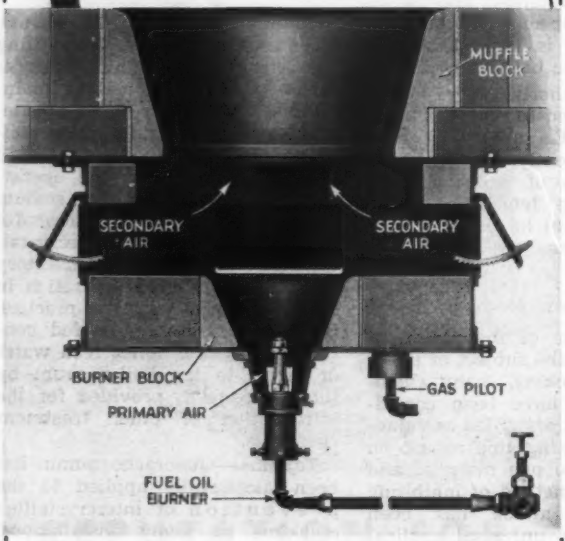
Waste sulfite liquor.—As with other inhibitors, control is based on maintaining a definite ratio of inhibitor to sodium hydroxide in the boiler water. Because of reported difficulties with foaming of the boiler water, waste sulfite liquor is not recommended for use in stationary boilers.

This discussion of the present status of intercrystalline cracking has been rather general because of the involved nature of the problem and the numerous complicating factors that may be encountered. Because of these individual factors, all embrittlement studies should be conducted under the supervision of a reputable laboratory, experienced in this work.

This material is from the Betz Handbook for Industrial Water Conditioning, written and published by W. H. and L. D. Betz, consulting engineers, Philadelphia.

ONE SATISFIED REFINER-OWNER *says:*

"We have used this oil burner unit in our asphalt heater almost continuously for over six years. Its all around performance has exceeded our original expectations. Our operators are enthusiastic about it. We are specifying it for several up-fired stills that we are about to build."



This illustration is an exact reproduction of the oil burner unit installation about which the above quoted statements was made.

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REFINING

Mid-Continent Bright-Stock Production Registers Gain

Bright-stock production of 12 Mid-Continent refineries totaled 239,811 bbl. during November, an increase of 23,071 bbl. over October's output of 216,740 bbl.

Figures released by the Western Petroleum Refiners Association showed a drop of 7,527 bbl. in viscous-neutral production with a November figure of 352,170 bbl. Inventories of bright stocks increased 23,629 bbl. from a total of 140,171 bbl. October 31 to 164,800 bbl. November 31, while viscous-neutral inventories climbed 17,871 bbl. from 212,157 bbl. to 230,078 bbl. during the period.

WAA Accepts Koppers Co. Oil City Plant Bid

The government-owned HF alkylation unit at Oil City, Pa., was sold last week by War Assets Administration to Koppers Co., Inc., Pittsburgh, for $1,230,125.

Koppers Co. officials said the firm will spend $1,500,000 over a period of several years to convert the plant to full operation in the production of alkylate aromatic compounds. The unit has a production capacity of 1,500 bbl. daily.

During the war the refinery was operated by Pennzoil Co. The plant was constructed by the Government at a cost of about $4,000,000.

Synthetic-Rubber Drop Of 3 Cents Predicted

CHICAGO.—A prediction that the price of synthetic rubber may "stabilize at approximately 15 cents a pound" was made here recently by Arthur W. Carpenter, manager of testing laboratories of B. F. Goodrich Co. Synthetic rubber made in government-owned plants now is selling for about 18 cents.

In a speech before a joint meeting of the Western Society of Engineers and the American Society for Testing Materials, Carpenter urged congressional action to "assure maintenance of and production from American synthetic-rubber plants to meet any national security needs."

Over the nation observers have predicted a continued high level of production of synthetic rubber during the first half of 1947, based on the forecast of a world shortage of natural rubber, with the permanent place of the synthetic industry in the country's economic picture to be determined during the closing months of the year.

Fuel Possible to Increase Mileage 40-50 Per Cent

TORONTO.—It is possible to produce higher-octane gasoline for use in high-compression automobile engines of the future which could raise mileage by 40 to 50 per cent while reducing costs, the Chemical Institute of Canada was told at its recent meeting here.

"The trend on improvement of antiknock quality of gasoline is sound and will continue," said E. V. Murphree, executive vice president of Standard Oil Development Co. "Through this improvement, it will be possible to use engines of higher-

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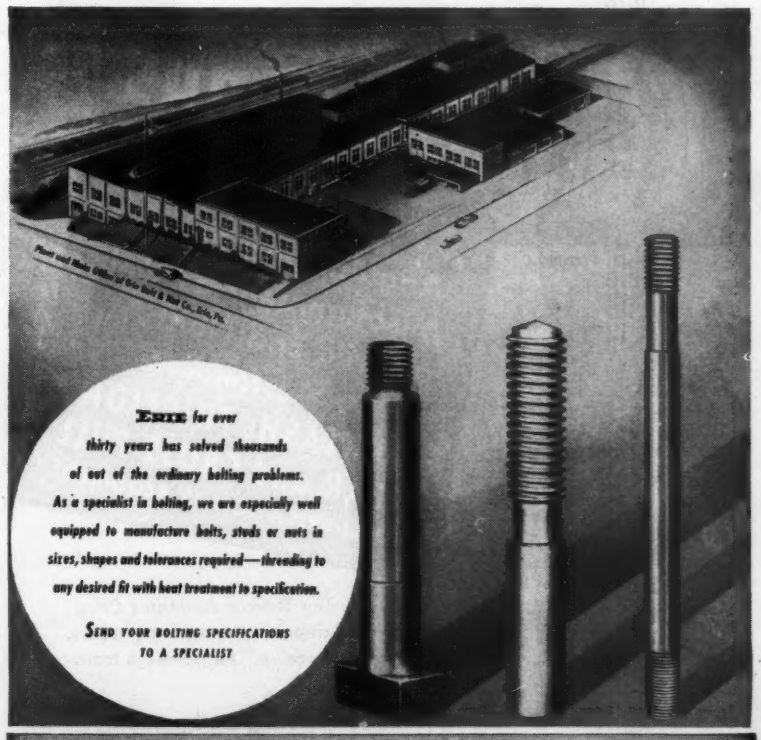
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compression ratio which in turn could give as high as 50 per cent increase in miles per gallon."

Murphree said that if the performance characteristics of a car be held constant, the increased mileage could be accomplished with higher-octane gasoline by going from an engine compression ratio of 6.6 to 1 to 12 to 1.

Murphree also told the institute that conversion of natural gas to gasoline is now economically competitive with gasoline from crude oil and that coal-conversion processes are continuing to be developed. He called attention to the record of the American oil industry in providing better gasoline at lower prices. In 1925, Murphree said, 60-octane gasoline sold for a refinery price of about 14 cents a gallon, while in 1945, 76-octane gasoline was selling at the refinery for about 5¾ cents a gallon.

Indiana Refining Expanding Oil-Storage Facilities

Indiana Farm Bureau Cooperative Association, Inc., Indianapolis, Ind., is increasing the tank-farm capacity of its Mount Vernon, Ind., refinery by 165,000 bbl.

The expansion will bring its total available storage capacity to 410,000 bbl. of crude oil and petroleum products.

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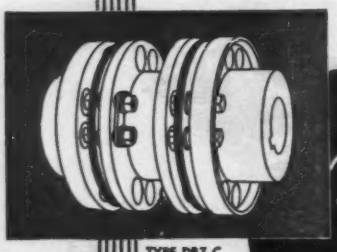

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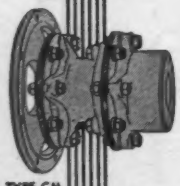

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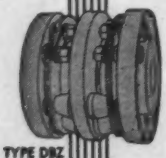

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Cracking-Capacity Increase To Minimize Lead Shortage

NEW YORK. — The "sizable increase" in the petroleum industry's catalytic-cracking capacity, which produces high-octane gasoline without the use of lead, "will do much to alleviate the lead-shortage situation from the consumer viewpoint" during the coming year, according to H. R. Austin, president of M. W. Kellogg Co.

Another important power development to be expected in the near future, Austin said, is the utilization of natural gas to make gasoline, diesel oils, and other fuels. The past year, Austin declared, "was marked by important advances in petroleum-refining procedure which will bring many benefits to industry and the consumer during 1947."

Premier Buys Interest In Arp Refinery

Premier Oil Refining Co., Longview, Tex., has purchased a half interest in the Arp, Tex., refinery of the Independent Refining Co., and will taken over operation of the unit immediately.

Consideration in the deal was not disclosed. The Arp refinery has a crude charging capacity of 4,000 bbl. daily with 2,000 bbl. daily cracking capacity.

S.A.E. Discussions

The following two abstracts are from papers presented at the annual meeting of the Society of Automotive Engineers earlier this month in Detroit. Other abstracts were published in The Oil and Gas Journal, January 18, pages 40-41.

Development of the Skinner Slide-Valve Engine

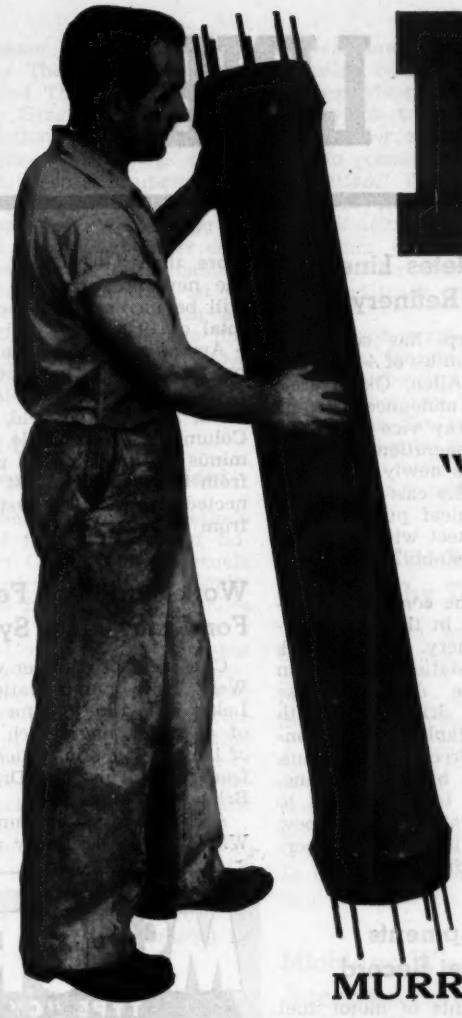
R. L. SKINNER, Skinner Motors, Inc.

THIS engine offers such advantages as elimination of poppet valves, a power-weight ratio of one to four, and car-weight reductions of up to 800 lb. Using much aluminum in building, we may reduce weight of 300-hp. trucks and coaches by 1,200 lb. or more. It is claimed that this slide-valve engine operates without detonation on lower-octane fuels, gives better economy, eliminates "hot spots," simplifies construction, and improves performance of V engines.

Copper-Brazed Crosley Motor

PAUL KLOTSCH, Crosley Motors, Inc.

A FOUR-CYLINDER automotive engine has been designed, made up of steel stampings, steel tubing, and screw machine parts. It weighs 120 lb. with accessories, and produces more than 26 hp. at 5,200 r.p.m. In the Crosley car it gives more than 50 miles per gallon at 30 m.p.h. The assembly is copper brazed in a 60-ft. furnace at 2,060° F. The cylinder block contains some 125 pieces, with copper, in sheet, wire, or paste form applied in every joint.



Murray Rubber

"mainspring" of the new

TEXAS IRON WORKS PUMP CHAMBER

The Texas Iron Works Pump Chamber is designed to eliminate harmful pump pulsations from mud lines and rotary hose. Its development is indicative of the fine results that can be achieved by co-ordinated engineering effort on the part of the equipment manufacturer and Murray Rubber Company.

The rubber component—probably the most difficult mechanical design involved in the Pump Chamber—was furnished by Murray, including design and manufacture of the mold and steel inserts. A special compound of Hycar synthetic oil-resistant rubber was selected to provide maximum efficiency and long life. The complete rubber part (see left) measures approximately 9¾" OD by 5' long. It is designed to seal nitrogen under 500 lbs. pressure in the chamber and "breathes" or expands and contracts with each stroke of the pumps to absorb the pulsations. Test runs under actual field conditions indicate both sound mechanical design *and the right rubber component for the job!*

Equipment manufacturers are invited to make generous use of the Murray engineering staff, modern rubber manufacturing plant, and tool and mold division which specializes in the production of customer's molds, inserts, dies, etc.

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A Texas Iron Works Pump Chamber installation.

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PIPE LINES

Sunray Completes Line Serving Allen Refinery

Sunray Oil Corp. has completed construction on 12 miles of 4-in. crude pipe line in the Allen, Okla., area, according to an announcement by F. L. Martin, Sunray vice president, directing refinery operations. The line runs from Sunray's newly developed Albright pool 4 miles east of Holdenville to the Greenleaf pump station where it will connect with a line to the company's 10,000-bbl. daily refinery at Allen.

The line gives the company a network of 175 miles in the fields surrounding the refinery. A 10,000-bbl. tank and pump station have been completed on the Albright lease where Sunray is drilling its fifth well. A 5,000-bbl. tank is under construction at the Greenleaf terminus.

Owen Stephens has been transferred from Allen to Holdenville to handle gaging operations for the new line. Bob Gilmore is pipe-line superintendent for the district.

Motor-Fuel Shipments By Pipe Line Set Record

Pipe-line shipments of motor fuel passed 20,000,000 bbl. during October for a new peacetime high, according to a report of the Bureau of Mines.

Motor fuel turned into pipe lines during the month totaled 20,263,000 bbl., an increase of 440,000 bbl. over September and a gain of 4,852 over October of 1945.

Motor fuel delivered from the lines totaled 20,710,000 bbl. in October, a gain of 1,144 bbl. over September and an increase of 2,833,000 bbl. over October of 1945.

Sinclair Opens Detroit Products Pipe Line

NEW YORK.—The first product pipe-line deliveries into Sinclair Refining Co.'s new Detroit terminal, located between Ford Road and Michigan Ave., just north of the Ford Dearborn plant, were made January 14.

Capacity of the line, which will carry burning oils as well as gasoline, is currently around 11,900 bbl. daily. The line connects at Toledo with the products line of more than 30,000-bbl. daily capacity from Sinclair's East Chicago refinery. Tankage at the Detroit terminal totals more than 119,000 bbl. Capacity of the new products line into Detroit will be increased as needed up to a total of 19,000 bbl. daily.

Among other communities reached by the Sinclair products pipe lines now building are Cleveland, Youngstown, Akron, Mansfield, Marion, and Columbus. Steubenville, present terminus of the Sinclair products line from the Atlantic Coast will be connected into the Ohio system by a line from Youngstown.

Work Started on Feeder For Great Lakes System

Construction is under way near the West Tulsa pump station of Great Lakes Pipe Line Co. for the building of a feeder line which will consist of 115 miles of 8-in. which will extend from West Tulsa via Drumright and Bristow to Allen, Okla.

At Bristow it will connect with the Wilcox Oil Co. refinery and at Allen

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it will terminate at the Sunray Oil Corp. refinery. The line is being coated and wrapped. The project is supervised by the Great Lakes organization. Construction has been contracted by Williams Brothers Corp.; Thelma Davis is spread superintendent for the contractor.

The section from West Tulsa to Drumright is being built under contract with Great Lakes; the remainder of the line is under contract let by Sunray. Wilcox participates in arrangements for the part of the line which will move its refinery products to the Great Lakes system.

Danner Is in Charge of Socony Venezuelan Project

H. S. Danner is now in Venezuela in charge of the operations of Socony-Vacuum Oil Co. of Venezuela for the construction of a 77-mile crude-oil line from a point 23 miles from Puerto la Cruz via the Guario field to the Guico field. Danner has been connected with the foreign operations of Socony-Vacuum Oil Co., Inc., for several years. During the construction of the Big Inch and Little Big Inch lines by War Emergency Pipelines, Inc., he participated in engineering work for the project on the staff of the chief engineer.

Work is now in progress on the right-of-way of the Guico line to prepare for immediate laying of pipe which is due to arrive in February. Construction has been contracted by Williams Brothers Co.

Water-Carrier Regulation Proposed by ICC Report

The Interstate Commerce Commission has issued a report of C. S. Morgan, chief carrier-research analyst, Bureau of Transport Economics and Statistics, entitled, "Problems in Regulation of Domestic Transportation by Water," printed by the Government Printing Office, price $1.00.

To the petroleum industry the most important recommendation is that carriers now engaged in bulk transportation of petroleum be subjected to regulation. "The growing complexity of transportation makes it difficult for any form of transportation to remain outside the sweep of regulation," the report states. "The spectacle, for example of unregulated tankers delivering gasoline and other petroleum products to a regulated pipe line for ultimate delivery to a regulated truck or railroad is incongruous."

In regard to rates and costs the report says, "The industry questions its ability to absorb the 1940-45 and subsequent increases in labor and other costs. With the exception of a few vessels, already disposed of, it finds war-built vessels too large or otherwise not fully suited to its needs."

Sinclair Trunk Line Enlarged by Three Loops

The program of Sinclair Refining Co., pipe-line department, for enlarging the capacity of the company's main trunk line entails the laying of three loops of 18-in. diameter.

These loops totaling 50 miles are to be located as follows near stations on the line in Kansas: 15-mile loop near Humboldt; 15-mile loop near Greeley; and 20-mile loop near Ridel. Work on the project is being carried on by O. C. Whitaker Co., which has field headquarters at Iola, Kans.

Michigan-Wisconsin Order Accepted by Company

WASHINGTON. — The Federal Power Commission has received Michigan-Wisconsin Pipe Line Co.'s acceptance of the certificate of convenience and necessity issued November 30 authorizing the company to construct and operate a $52,618,823 natural-gas transmission system from Texas to Michigan.

The pipe-line facilities authorized included 1,069 miles of 26 and 22-in. main gas-transmission line from Hansford County, Texas, to Austin storage field, Michigan, and auxiliary facilities. The certificate was issued subject to the satisfactory compliance by Michigan-Wisconsin and others of the conditions specified in the order.

Pumping Units Added To Stanolind 16-In.

Stanolind Pipe Line Co. will complete new main line stations March 1 on the 16-in. West Texas-Drumright crude-oil pipe line. These stations are located near Childress, Tex., and El Reno, Okla.; capacity of the line is being increased 20,000 bbl.

The company is also adding a unit to each of the two stations currently

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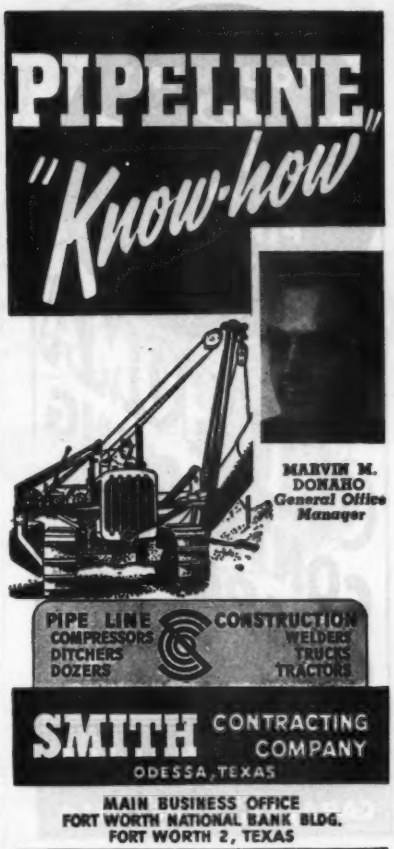

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For crude, products, natural gas and water lines. Sizes 6-inch to 20-inch. Other types in sizes 2-inch to 26-inch.

*Patent pending.

in operation at Slaughter, Tex., and Bretch, Okla. All of the stations on this 16-in. line are electric centrifugal.

The company is now surveying the route for the 91-mile 16-in. which will extend the system from Wasson to Wheeler, Tex.

Looping Program Is Pushed For Mississippi River Fuel

Mississippi River Fuel Corp. will complete a total of approximately 31 miles of loops by the end of this month, contracted by Holland Construction Co. which has field offices at Newport and Carlisle, Ark. This contractor has three spreads in the field; work is supervised by H. T. Holland, president, and G. G. Griffis, general superintendent and partner. Work completed consists of 3 miles of 22-in. near Walnut Ridge, Ark. and 15 miles of 12-in. near Newport. Work is progressing on 10 miles of 22-in. near Carlisle and 3 miles of 22-in. near Altheimer, Ark.

The Mississippi River Fuel Corp. line in the sections being looped is 4 to 5 miles from the Big Inch system; much of the right-of-way is in rice-field country where laying operations are slow. The winter looping program of Mississippi Fuel also includes 6½ miles of 22-in. being laid by Ford, Bacon & Davis near Crossett, Ark.

Arrangements are to be made later for the remainder of the Mississippi Fuel looping totaling more than 200 miles which is part of a program for increasing gas deliveries in St. Louis by an additional 50,000,000 cu. ft.

Bids to Be Asked Soon For Wyco Pipe Line

Specifications for bids are now being prepared by Wyco Pipe Line Co. for a 271-mile pipe line from Casper, Wyo., to Cheyenne and Denver, which will carry gasoline, distillate fuels, and other petroleum products to the latter cities from the company's refineries.

The Wyoming Public Service Commission last week granted the company intrastate-operation authority. Fred E. Wood, vice president of the pipe-line company, said construction is scheduled to begin in early summer and should be completed by the end of 1947.

Lamont-Lewis Run Pipe Line to Be Finished Soon

Construction is expected to be completed within the next few weeks on the 16-mile, $250,000 pipe line from Lamont, Pa., to Lewis Run. The line will become a part of an auxiliary system of United Natural Gas Co.

Construction is now several weeks behind schedule because of delays caused by equipment failures and bad weather.

Inch Line Gas Deliveries Are Steadily Increased

Tennessee Gas & Transmission Co. in operating the Big Inch and Little Big Inch has been delivering 115,000,000 to 120,000,000 cu. ft. daily in the first half of this month. Recently deliveries have been 140,000,000 cu. ft. daily and these are expected to be steadily increasing. Input pressures have been increased from 650 psi. to a range of 700 to 750 psi. Delivery pressures have been 125 to 150 psi. at several connections in Ohio, West Virginia, and Pennsylvania.

New connections have been made at the southern end including one with Hunt Oil Co. for transmitting gas from the Harleton, Tex., area. In addition to the gas injected by T. G. & T. into the Little Big Inch 20-in. line at a point near Many, La., Lone Star Gas Co. is transmitting natural gas from the Carthage, Tex., field to the Big Inch 24-in. line through the existing gathering system serving the Longview, Tex., terminal.

Indiana Standard Line Construction Delayed

Standard Oil Co. (Ind.) has a total of approximately 31 miles of pipe to lay on its 636-mile refined-products system from the vicinity of Joliet, Ill., to Minnesota points. Operations of the contractors, H. C. Price Co., Eastern Construction Co., McVean & Roberts, and Bechtel Brothers-McCone Co., have been temporarily suspended during the past week because of cold weather.

Air Patrol Inaugurated

Sohio Pipe Line Co. has inaugurated air patrol of its crude and product lines in Michigan, Indiana, Illinois, and Ohio, following the purchase of a four-passenger, radio-equipped airplane.

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MIDGET No. 1—1 swivel, ¼" chain
DEI-TA No. 1—1 swivel, ⅜ or ½" chain
DIXIE No. 1—2 swivels, ⅜ or ½" chain
LONE STAR 1—2 swivels, ⅜, ½ or ⅝" chain
LONE STAR 2—2 swivels, ⅜, ½ or ⅝" chain

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STEADY PLUGGER!

It takes a lot of gumption to keep plugging away at some jobs—and oil field men agree Fairbanks-Morse ZC Engines have just that!

Day after day—through good and bad weather—they give dependable pumping service. Their slow speed means slow wear. Their simple design and vapor cooling system mean minimum maintenance.

They're built without water-circulating pumps, thermostats, hose connections, or oil pumps. They're easy on fuel and lubricating oil . . . and the rare times they need servicing, any fieldman can handle it on the spot. Fairbanks, Morse & Co., Chicago 5, Illinois.

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Oil Field Equipment · Diesel Locomotives · Diesel Engines · Generators · Motors · Pumps Scales · Magnetos · Stokers · Railroad Motor Cars and Standpipes · Farm Equipment

Fairbanks-Morse Super-Spark MAGNETOS make engines start easily, improve performance, save fuel. Models for all engines. See the nearby Fairbanks-Morse Magneto Service Station.

STATISTICS and T

WEEKLY WELL COMPLETIONS . . . WEEK ENDED JANUARY 18, 1947

	Total of all wells					Cum.		Wildcat completions and discoveries					Cumulative total, 1947				
	Comp.	Oil	Gas	Dry	Footage	1947	1946	Oil	Dist.	Gas	Dry	Total	Oil	Dist.	Gas	Dry	Total
New York	31	16	0	*15	44,891	80	83	0	0	0	0	0	0	0	0	0	0
Pennsylvania	67	29	2	†36	108,322	178	213	0	0	0	0	0	0	0	0	0	0
West Virginia	10	3	6	1	28,588	35	33	0	0	0	0	0	0	0	0	0	0
Ohio	31	6	16	9	98,866	78	44	0	0	0	2	2	0	0	1	2	3
Indiana	8	6	0	2	16,576	28	20	1	0	0	0	1	1	0	0	2	3
Kentucky	10	5	1	4	18,932	29	28	0	0	0	2	2	0	0	0	5	5
Illinois	43	22	0	21	113,119	127	108	3	0	0	10	13	5	0	0	27	32
Michigan	16	1	1	14	35,645	50	32	0	0	0	8	8	0	0	1	18	19
Kansas	23	7	5	11	70,065	154	144	0	0	0	2	2	1	0	0	13	14
Neb., Mo., Iowa	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Oklahoma	57	24	6	‡27	176,517	239	144	0	0	0	12	12	3	0	0	41	44
Texas	148	113	7	28	713,326	419	483	8	0	0	19	27	15	0	1	61	77
North Central	38	29	0	9	104,077	138	177	3	0	0	5	8	5	0	0	28	33
West	47	43	0	4	236,517	107	97	0	0	0	2	2	1	0	0	7	8
Panhandle	6	1	5	0	19,078	24	22	0	0	0	0	0	0	0	0	0	0
Eastern	10	8	0	2	51,765	26	44	0	0	0	1	1	1	0	0	4	5
Gulf Coast	39	28	2	9	270,846	95	115	5	0	0	7	12	7	0	1	12	20
Southwest	8	4	0	4	31,043	29	28	0	0	0	4	4	1	0	0	10	11
Louisiana	28	14	1	13	179,898	62	59	0	0	0	6	6	1	0	0	10	11
Northern	14	8	0	6	49,041	29	25	0	0	0	2	2	0	0	0	5	5
Southern	14	6	1	7	130,857	33	34	0	0	0	4	4	1	0	0	5	6
Arkansas	4	3	1	0	24,831	14	6	0	0	0	0	0	0	0	0	4	4
Mississippi	7	4	0	3	54,941	25	12	0	0	0	3	3	0	0	0	8	8
Southeastern States	2	0	0	2	6,324	4	5	0	0	0	2	2	0	0	0	4	4
Montana	5	3	0	2	14,772	11	15	0	0	0	2	2	0	0	0	2	2
Wyoming	5	5	0	0	20,147	17	7	0	0	0	0	0	2	0	0	4	6
Colorado-Utah	1	1	0	0	6,371	11	9	0	0	0	0	0	0	0	0	2	2
New Mexico	13	7	1	5	65,723	27	23	1	0	0	3	4	1	0	0	3	4
California	33	28	1	4	113,781	113	106	0	0	0	4	4	0	0	0	18	18
Total United States	542	297	48	197	1,911,635	1,701	1,575	13	0	0	75	88	29	0	3	224	256
Total previous week	679	352	72	255	2,258,206	1,159	1,006	6	0	2	97	105	16	0	3	149	168
Total Jan. 19, 1946	569	314	46	209	2,031,625			9	0	2	78	89	22	0	7	186	215

Service wells included: *15, †31, ‡1.

MARKET QUOTATIONS

GRAVITY SCHEDULES

Top prices include all gravities above grades designated, and low prices include all gravities below grades designated:

Gravity—	Signal Hill, Calif.	Oklahoma, Kansas	Gulf Coast Tex.*	West Tex.†
18-18.9	$1.17			
19-19.9	1.21			
20-20.9	1.24	$1.30		$1.17
21-21.9	1.28	1.32		1.19
22-22.9	1.32	1.34		1.21
23-23.9	1.35	1.36		1.23
24-24.9	1.39	1.38	$1.61	1.25
25-25.9	1.43	1.40	1.63	1.27
26-26.9	1.46	1.42	1.65	1.29
27-27.9	1.50	1.44	1.67	1.31
28-28.9	1.54	1.46	1.69	1.33
29-29.9	1.57	1.48	1.71	1.35
30-30.9	1.61	1.50	1.73	1.37
31-31.9		1.52	1.75	1.39
32-32.9		1.54	1.77	1.41
33-33.9		1.56	1.79	1.43
34-34.9		1.58	1.81	1.45
35-35.9		1.60	1.83	1.47
36-36.9		1.62	1.85	1.49
37-37.9		1.64	1.87	1.51
38-38.9		1.66	1.89	1.53
39-39.9		1.68	1.91	1.55
40 and above		1.70	1.93	1.57

*For crude from Daboval, El Campo, and Sandy Point. †Includes Lea County, New Mexico.

(Quotations shown here are f.o.b. plant in tank cars and in cents per gal. as of last Monday.

REFINERY GASOLINE

Octane (A.S.T.M.)	78-80†	73-75
Mid-Continent*	7.375-7.625	6.750-7.000
Tex. Gulf Coast	7.50-7.75	6.750-7.125
New York Harbor	9-10.75	8-9.25

*Basic Oklahoma Group 3. †1939 C.F.R. (research method).

NATURAL GASOLINE

Grades—	26-70	18-55
Oklahoma (Group 3)	5.000	6.000
N. Texas (f.o.b. plant)	4.500	5.400
N. Louisiana (f.o.b. plant)	4.750	5.700

CRUDE-OIL PRICES

Representative posted schedules per bbl.

East Texas	$1.70
Kettleman Hills, California*	1.69
Beauregard Parish	1.65
Illinois Basin	1.82
Pecos County, Texas (Yates)	1.40
Bradford, Pennsylvania	3.65
Eastern Ill., and Western Ind.	1.67
Tomball, Texas Gulf Coast	1.85

Note: Crude prices exclusive of subsidy.

A.P.I. REFINERY REPORT

Week ended January 11, 1947

(Figures in thousands of barrels)

	Dly. crude runs to stills	Stocks—Gasoline	Stocks—Distillate	Stocks—Residual
East Coast	701	20,341	19,297	8,098
Appalachian	166	3,640	611	490
Ill., Ind., Ky.	773	18,340	5,243	3,761
Okla., Kan., Mo.	381	9,201	2,248	1,191
Inland Texas	217	3,815	478	747
Tex. Gulf Cst.	1,210	14,924	10,166	6,742
La. Gulf Cst.	338	5,200	3,935	2,059
N. La., Ark.	61	1,999	511	123
Rocky Mtn.	134	2,244	461	600
California	797	16,843	11,838	27,612
Total 1-11-47	4,778	96,547	54,788	51,423
Total 1- 4-47	4,917	*94,882	58,034	53,285
Total 1-12-46	4,449	99,882	33,246	38,256

*Revised by Bureau of Mines.

CRUDE-OIL STOCKS

(Bureau of Mines Estimate)

Week ended—	Bbl. of crude*
January 11, 1947	220,553,000
January 4, 1947	223,291,000
January 12, 1946	219,219,000

*Excludes unrefinable Calif. stocks.

TRENDS

DAILY AVERAGE PRODUCTION FOR WEEK

	Jan. 18 crude oil	B. of M. Jan. demand	Jan. 11 crude oil
Alabama	600	1,200	550
Arkansas	78,250	76,000	79,000
California	878,300	838,000	885,000
Colorado	36,710	33,000	37,480
Eastern	64,000	64,200	65,750
Florida	240	200	240
Illinois	194,600	209,000	194,700
Indiana	17,200	19,000	17,200
Kansas	257,050	260,000	189,900
Kentucky	27,750	28,000	29,700
Louisiana	416,375	382,000	416,275
North Louisiana	102,750	.....	102,650
South Louisiana	313,625	.....	313,625
Michigan	42,250	46,000	42,705
Mississippi	85,650	62,000	89,100
Montana	22,960	24,000	22,640
Nebraska	700	800	550
New Mexico	103,000	98,000	103,000
Oklahoma	363,650	375,000	355,800
Texas	1,931,615	2,030,000	1,931,615
District 1 (Southwest)	19,085	.....	19,085
District 2 (Southwest)	133,110	.....	133,110
District 4 (Southwest)	206,525	.....	206,525
District 3 (Gulf Coast)	412,175	.....	412,175
District 5 (Eastern)	33,700	.....	33,700
District 6 (Eastern)	99,435	.....	99,435
East Texas field	301,000	.....	301,000
District 7C (West)	27,585	.....	27,585
District 8 (West)	464,725	.....	464,725
District 7B (W. Central)	34,000	.....	34,000
District 9 (N. Central)	118,225	.....	118,225
District 10 (Panhandle)	82,050	.....	82,050
Wyoming	105,110	93,000	100,180
Miscellaneous	.....	600	.....
Total United States	*4,626,010	4,640,000	4,561,385

Change from prev. wk., up 64,625

Total production January 1-January 18..... †83,469,065 bbl.
Same period last year (crude, plus condensate).. 91,238,350 bbl.
*Not incl. 25,260 bbl. condensate. †Incl. 454,680 bbl. condensate.

CRUDE-OIL STOCKS 220,553,000 bbl. as of January 11—down 2,738,000 bbl. One year ago 219,219,000 bbl.

GASOLINE STOCKS 96,547,000 bbl. as of January 11—up 1,665,000 bbl. One year ago 99,882,000 bbl.

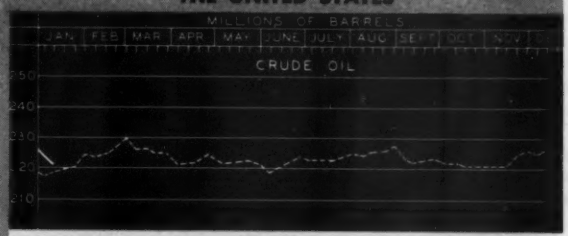
RESIDUAL FUEL-OIL STOCKS 51,423,000 bbl. as of January 11—down 1,862,000 bbl. One year ago 38,256,000 bbl.

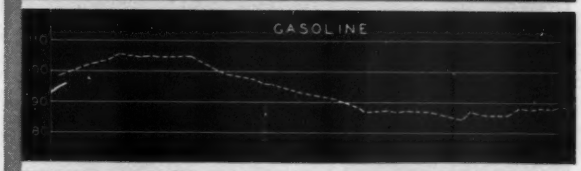
GAS OIL AND DISTILLATE STOCKS 54,788,000 bbl. as of January 11—down 3,246,000 bbl. One year ago 33,246,000 bbl.

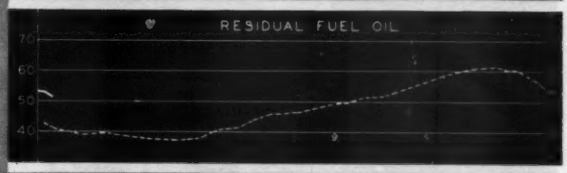
CRUDE-OIL PRODUCTION 4,626,010 bbl. as of January 18—up 64,625 bbl. One year ago 4,600,400 bbl.

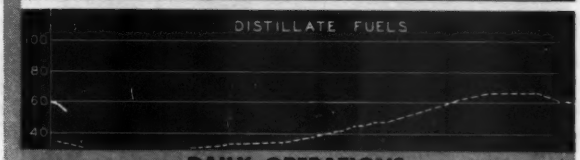
REFINERY RUNS 4,778,000 bbl. daily week ended January 11—down 139,000 bbl. One year ago 4,449,000 bbl.

OIL STOCKS IN THE UNITED STATES

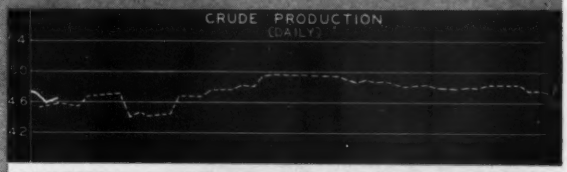


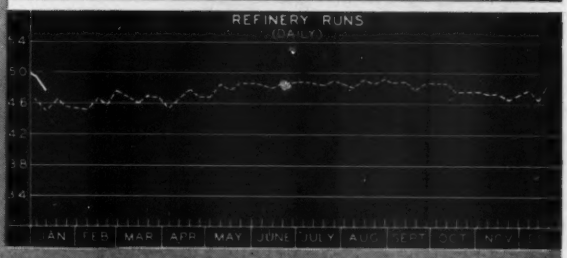




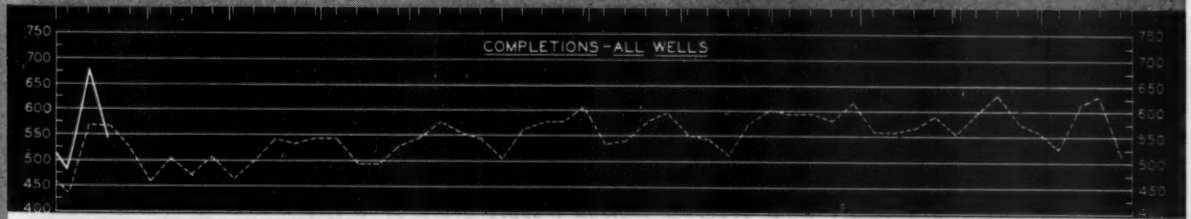


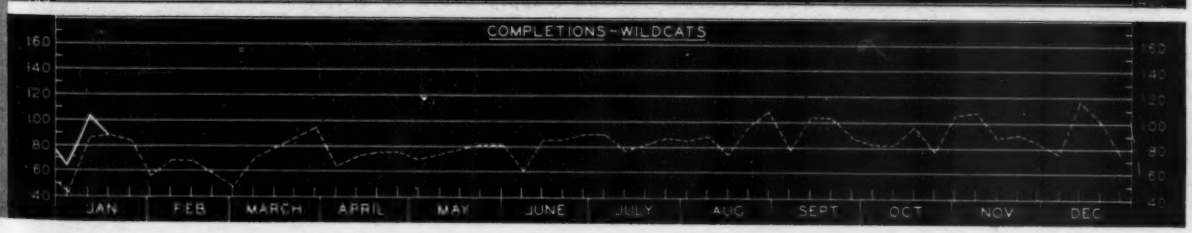
DAILY OPERATIONS

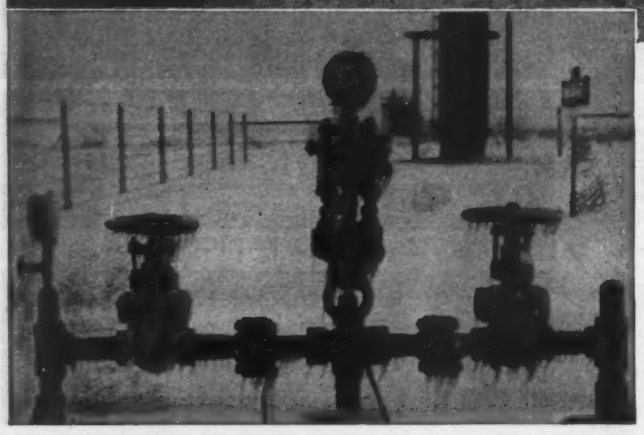




Solid line charts weekly completions, service wells in Eastern area included.







—The UNFORTUNATE COYOTE —The NIXON REGULATOR Operating at "Below Freezing"

Yes—strange things happen in the Oil Fields.

The Coyote shown above made the mistake of traveling along a 2″ gas line in the South Alice Field. Carrying 1250 pounds pressure, about 600 feet of the line blew up and one joint wrapped itself around the Coyote's neck, killing him instantly.

The picture of the Nixon Selective Flow Differential Regulator was taken in the Hobbs, New Mexico Field, with the temperature at 10 degrees above zero. It was reducing gas pressure from 1200 to 400 pounds and passing 500,000 cu. ft. of wet gas per day. *No Heater* was on the line and the Regulator *did not freeze.*

Nixon Regulators hold freezing to a minimum because of the full opening, snap action valve.

Contact Your Nearest Wilson Supply Store or Write

WILSON SUPPLY COMPANY

1412 MAURY ST., HOUSTON, TEXAS

SALES OFFICES: Tulsa, Oklahoma; Dallas and San Antonio, Texas. LOS ANGELES: Western Pressure Control, 5700 Santa Fe Avenue. TRINIDAD, B.W.I.: Neal Massey Eng. Corp.

BRANCH STORES: TEXAS—Kilgore, Beaumont, Barbers Hill, Bay City, Monahans, Alice, Victoria, Corpus Christi, Columbus. LOUISIANA—Lake Charles, New Iberia, Harvey, Shreveport. ARKANSAS—Magnolia. MISSISSIPPI—Natchez.

NATURAL GAS

New Line Will Increase New Orleans Gas Supply

NEW ORLEANS.—A new natural-gas supply for New Orleans will be tapped soon with the completion of a 17.4-mile, 12-in. pipe line from Barataria oil field in Jefferson Parish. Construction of the line is expected to begin immediately, according to H. F. Carr, district manager of United Gas Pipe Line Co.

Designed also as a conservation measure, the line is expected to pick up about 1,000,000,000 cu. ft. of gas a year now flared in the field, in addition to other gas produced from deep sands. It is expected also to open a market for the gas-condensate sands in the Stella field which have been closed in since their discovery.

Louisville Gas & Electric To Get Additional Gas

WASHINGTON. — Federal Power Commission has authorized Tennessee Gas & Transmission Co. to deliver to Louisville Gas & Electric Co. 1,-500,000 cu. ft. of natural gas per day. This delivery will be made from the 5,000,000 cu. ft. per day of Big Inch gas reserved according to FPC instruction to T.G&T.

Deliveries to the Louisville company are to be made from T.G&T.'s own pipe line by reduction in deliveries to United Fuel Gas Co. and a corresponding increase in deliveries from the Big Inch lines to the Columbia system in Ohio, West Virginia, or Pennsylvania.

Bakersfield to Get More Natural Gas Via New Line

BAKERSFIELD, Calif.—Completion of a $272,000 pipe line by Pacific Gas & Electric Co. soon will provide this city with a large additional supply of natural gas.

The new line, 8½ miles of 12-in. pipe, will bring gas into Bakersfield at a pressure of 500 psi. from a connection with Southern California Gas Co.'s transmission line.

Texas Commission Amends Carthage Cycling Permit

AUSTIN.—The Texas Railroad Commission last week amended the cycling permit of Lone Star Producing Co., Rogers Lacy, and others in the Carthage gas field, Panola County, to permit injection into the upper Pettit horizon of gas produced from two other levels.

In ruling it not feasible to require cycling of the lower Pettit and Travis Peak formations, the commission order said the principal effect of the change is to permit gas from three sands to be carried in the same pipe line.

Decline Shown in 1946 Alberta Gas Production

EDMONTON, Alta. — Preliminary estimates place natural-gas production from all Alberta wells in 1946 at 50,250,000,000 cu. ft. of which over 5,250,000,000 cu. ft. was returned to the Bow Island and Turner Valley gas formations, leaving a net withdrawal of around 45,000,000,000 cu. ft. compared with 48,500,000,000 cu. ft. in 1945. In 1946 the waste of gas and shrinkage due to absorption of natural gasoline, removal of waste fractions, etc., amounted to slightly over 10,000,000,000 cu. ft.

Abilene Gets Second Natural-Gas Supply

Supply of natural gas for Abilene, Tex., has been increased 6,000,000 cu. ft. daily by the installation of a measuring station by Lone Star Gas Co. on a line which formerly served nearby Camp Barkeley.

A regulator station also is being built to reduce the high pressure to conform to the local low-pressure system. About 8,000 ft. of 6-in. line is being laid to transport gas from the new measuring station to the city distribution mains. The additional facilities, giving Abilene two sources of supply, will decrease demand on the old city line, thereby strengthening the supply to towns west of Abilene.

Rate Hearing Delayed

WASHINGTON.—A hearing in connection with an investigation of wholesale natural-gas rates of Tennessee Gas & Transmission Co. has been postponed until February 3 by the Federal Power Commission. The hearing will be held in Washington.

Lengthy Legal Fight Due Over Gas Pricing Order

A PROLONGED legal fight, which may be carried into the federal courts, is indicated as a result of the Oklahoma Corporation Commission's price-fixing order setting a 7-cent minimum per 1,000 cu. ft. for natural gas at the well-head in the Guymon-Hugoton field.

Though the purchasing companies affected by the order are posting bonds while the case is being appealed, Homer W. Long, president of the Texas County Land and Royalty Owners Association, asserted the group's members within 10 days will notify leaseholders they will insist on payments based on the commission's order. He indicated the association will carry the case into federal courts if the Oklahoma Supreme Court fails to uphold the commission's action.

Transporters and distributors, however, generally opposed to the new order, expressed the belief the order will impose a burden on them and result in higher costs to consumers, particularly large industrial users, and place gas at a disadvantage with competing fuels.

The latter group expressed fears that both state and federal agencies might contend that distributors can absorb a portion of the well-head price increase, thereby reducing their rate of return.

Both groups agreed that if the commission's order is sustained by the courts, the well-head price increase will spread to all other major producing states.

The Oklahoma commission's order grew out of a case brought by Peerless Oil & Gas Co. to compel Cities Service Gas Co. to make pipe-line connections to two Peerless wells, to obtain a minimum field price of 10 cents, and to force purchasers to pay on a basis of 14.65 psi. pressure. The two companies reached an agreement on the connecting of the wells while the case was pending, but the commission in its final order granted establishment of a 7-cent price on a basis of 14.65 psi. pressure.

Cities Service has given written notice of an appeal to the state Supreme Court.

Plant Being Modernized

Installation of new scrubbing facilities at the Newhall Station of Southern California Gas Co. and modernization of the metering and regulating setup, including installation of new odorizing equipment, is expected to be completed early in March. The project, started late in November, will cost an estimated $92,000.

Where Preference Points to Diamond Drives

■ It is needless to emphasize the importance of sturdiness in engines for, as power producers they must be reliable... Likewise out in the big open spaces—the drilling for oil calls for rugged yet highly efficient machinery and rugged men who take pride in their accomplishments.

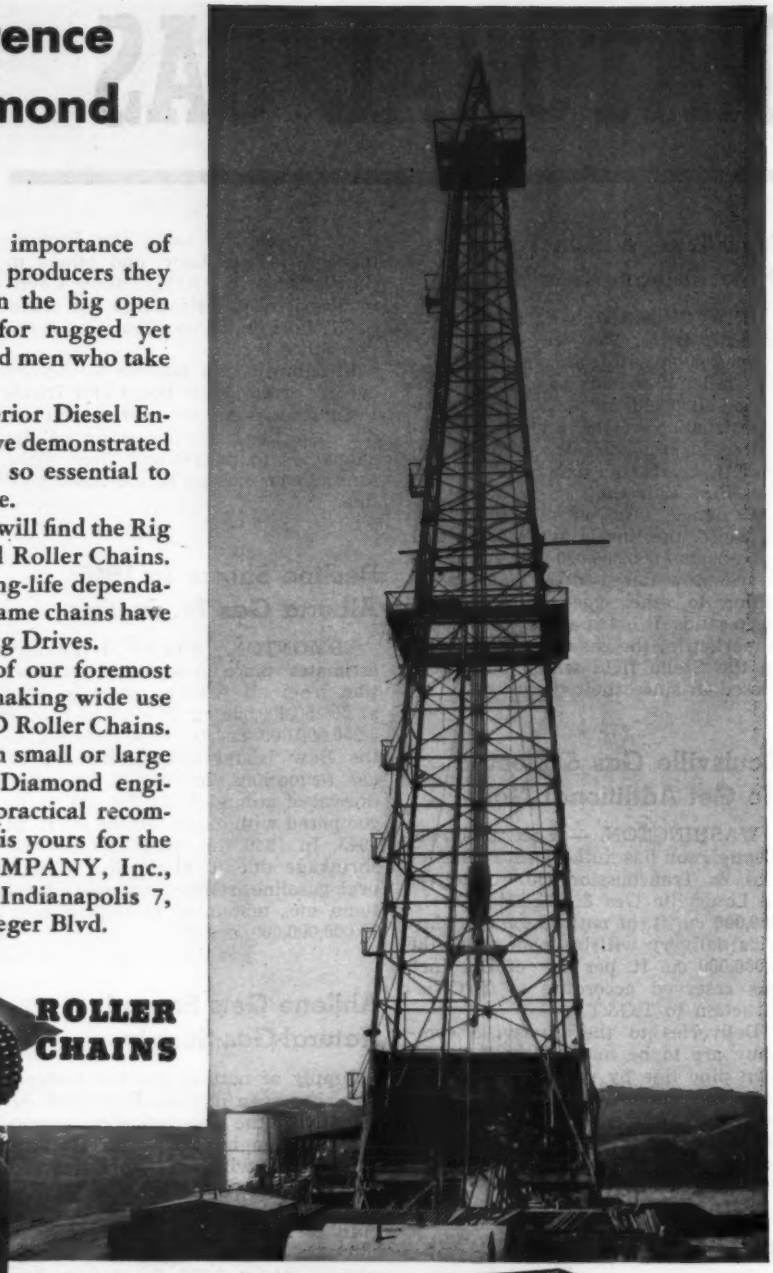
National Supply Company's Superior Diesel Engines and Drilling Rigs for years have demonstrated both the reliability and ruggedness so essential to efficient and economical performance.

To match such characteristics, you will find the Rig and Drawworks drives are Diamond Roller Chains. And on the Diesels—the accuracy, long-life dependability, and the adaptability of these same chains have given them preference for the Timing Drives.

National Supply is but another of our foremost builders of a diversity of products making wide use of positive, high efficiency DIAMOND Roller Chains.

Whatever your drive problems—in small or large capacities, for high or low speeds, Diamond engineers can help save your time with practical recommendations. Drive Data Book 595 is yours for the asking. DIAMOND CHAIN COMPANY, Inc., Dept. 475, 402 Kentucky Avenue, Indianapolis 7, Indiana. Tulsa Office: 2238 Terwilleger Blvd.

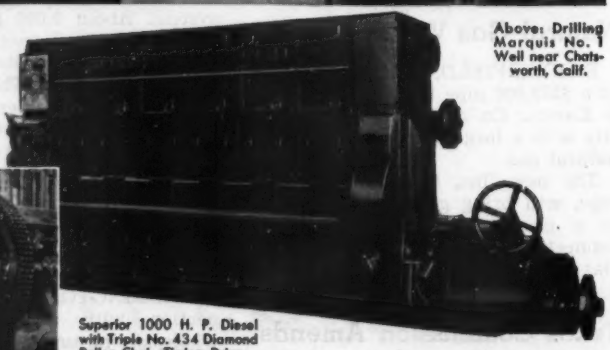
DIAMOND **ROLLER CHAINS**



4-engine Ideal Consolidated 125 Drilling Rig with enclosed oil-bath Triple No. 472 Diamond Roller Chain Drive Compound Unit. The engines shown have Diamond Timing Drives.

Above: Drilling Marquis No. 1 Well near Chatsworth, Calif.

3-engine Chain Drive Compound Unit with guards removed showing the two Triple No. 472 Diamond Drives.



Superior 1000 H. P. Diesel with Triple No. 434 Diamond Roller Chain Timing Drive—crankshaft to camshaft.

Exploration and Drilling

Geologists Are Not Pessimistic

by Charles J. Deegan

THERE are some people who are worried about the United States running out of oil, but oddly enough, the men and women who have the responsibility for finding new oil are not among the worriers. At Wichita last week, the geologists smashed all attendance records for a regional meeting of the American Association of Petroleum Geologists, and surpassed the attendance records of some annual national meetings. But in 3 days there was not a single note of pessimism among the nearly 1,000 members present. There were no pessimistic notes in the papers on the formal program; neither were there any such overtones in the hundreds of informal huddles in the lobbies and halls.

The outstanding impression of the meeting was one of large groups of confident, competent scientists, breaking up various problems into specific assignments to various committees, mapping out courses of action, and making plans that in some instances will take years to carry out. Many of these plans involve large-scale operations, but there was no hesitation on that score; everybody merely taking it for granted that the necessary time, manpower, and money would always be available for worth-while projects.

The work of the research committee is an excellent example of what is going on. Nearly 2 years ago this committee, under the chairmanship of Shepard W. Lowman, decided to attack the largest and most complex task ever undertaken by a professional society. This task was to survey the whole field of petroleum geology for gaps in knowledge, decide what problems could be solved by research to fill the gaps, outline the problem and type of research specifically, find some organization with manpower and facilities to work on the problem, and finally to find financial support for the research work.

At Wichita, this committee was busily engaged in polishing for submission to the executive committee at Los Angeles proposals for specific research projects in clay minerals; organic sediments; formation waters; bacteria projects; recent sediments; ancient sediments; carbonate porosity; cementation; well logging; medium-grained clastics, sands and silts; environmental distribution of fossils; and carbonates. Several of these have already been presented in a preliminary way to the research committee of the American Petroleum Institute, which has expressed considerable interest. After final approval by the executive committee at the A.A.P.G. meeting in Los Angeles, it is probable that some of these specific projects will be accepted and financed by the A.P.I.

The committee on geologic names and correlations, with Henry J. Morgan, Jr., as chairman, after a resurvey of its field and problems, is in the preliminary stages of subdividing a larger task with the addition of more members in various parts of the country, in order to do a more comprehensive job in the future.

The papers presented on the program (digests of which were carried in The Oil and Gas Journal January 11, 1947, page 43) drew crowds which taxed the capacity of the meeting room from morning until evening. So carefully had the program committee planned the topics and picked the speakers, that repeated expressions were heard that rarely had the association presented a program with such uniformly high-quality papers, so carefully integrated that each speaker's work fitted in with some phase of both the previous and subsequent papers.

From the standpoint of audience reaction, the high spot of the meeting was the technique used by R. B. Downing in presenting a portion of the paper on "Radioactivity Logs in Limestone Reservoirs." Using an adaptation of the techniques developed by the Army for visual education, the theory of radioactivity logging was presented in simple nontechnical terms, using variations of comic-strip characters in connection with very large charts and diagrams, mounted on a flipboard. The hundreds of geologists present were almost unanimous in agreeing that even scientists like to have highly complex material presented in an elementary and humorous method, if, at the same time, scientific accuracy is preserved.

Most of the papers from late Thursday all through Friday, dealt directly or indirectly with the future oil possibilities of the Anadarko basin. In keeping with the theme of the meeting, and with the current trend in company geological department policies, there was a constant interpolation from the local detail to the regional picture, and from the regional picture to its meaning in terms of finding local oil fields. The association appears to be finding a natural blending of pure and applied science; a common ground in developing general geological knowledge and finding oil fields to make a profit. A workable formula seems to be developing as to what knowledge individual companies can afford to contribute to the common fund of public knowledge and what must be preserved as company secrets for competitive advantage.

The officers and members of the committees of the Kansas Geological Society were highly complimented by National President Earl B. Noble for the great success of the meeting. The officers are E. Gail Carpenter, president; Lee H. Cornell, vice president, and Don W. Payne, secretary-treasurer. The committee members were: General committee, E. C. Moncrief, chairman; and N. D. Clark, Virgil B. Cole, and John W. Inkster. On the program committee were: Edward A. Koester, chairman; and James C. Condon, James I. Daniels, David L. Evans, J. W. Gardner, Delmer L. Powers, and John H. Lapp.

On the reception committee were Millard W. Smith, chairman; and Charles S. Agey, L. C. Hay, L. Clark Morgan, and T. G. Wright. The registration committee was headed by John L. Garlough, chairman, with Delbert J. Costa, Burton C. Dunn, W. W. Heathman, and Walter W. Larsh assisting. M. J. Boreing was chairman of the entertainment committee, and had as assistants, Lee H. Cornell, Jack W. Heathman, Robert B. McNeely, and R. S. Webb. The all-important finance committee had K. T. Woodman as chairman, aided by M. F. Bear, L. Leslie Cotter, Jr., L. E. Phillips, and R. A. Whortan.

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LA.-ARK.

Catahoula Parish Test to Be Completed as Small Pumper

SHREVEPORT. — Penrod Drilling Co. 1 J. P. Mitchell, 6 miles east of Jonesville, in Catahoula Parish, was preparing to complete as a pumper. Total depth was 9,471 ft., and operators plugged back to 9,325 ft. and installed pump. The well was flowing by heads, through 20/64-in. tubing choke, and making approximately 10 bbl. of fluid an hour, testing 20 to 65 per cent oil and the balance salt water. Gas was estimated at 100,000 cu. ft., with tubing pressure ranging from zero to 100 lb. Casing pressure ran as high as 1,125 lb. Oil is from perforations in the Tuscaloosa at 9,330-34 ft., with top of the zone placed at 8,700 ft. by electric log.

In Nevada County, Arkansas, on the north edge of the abandoned Falcon field, Spartan Drilling Co. 1 J. M. Stocks, N½ NW SE 19-15s-22w, had total depth at 3,725 ft. Perforations at 2,101-07 ft., in Tokio sand, filled the hole with oil and operators were waiting on pump before making tests.

NORTH LOUISIANA WILDCAT FAILURES

Grant Parish: W. E. Allaum 1 fee, SW SE 14-7n-2w, dry, TD 5,440 ft., no tops reported.

Richland Parish: M. E. Wakefield 1 A. K. Baker, NE NW NW 4-15n-7e, dry, TD 3,520 ft., elev. 69 ft., electric log tops: Wilcox 1,250 ft., no chalk, gas rock 2,645-50 ft., Marine Tuscaloosa 2,950 ft., Massive sand 3,254-60 ft., show oil in cores 3,255-56 ft.

N. CENTRAL TEXAS

Coleman County Discovery May Make 200 Bbl. Daily

WICHITA FALLS.—In Coleman County, 4 miles west of Novice, R. T. Owen and Rhodes Drilling Co. 1 M. B. Hill was holding up potential tests for additional storage tanks. The new sand pool opener was estimated good for 200 bbl. of oil a day from pay logged at 3,735-51 ft. Completion at the discovery has been delayed by a premature shot in the hole which necessitated cleaning out operations.

In Jack County, Warren Oil Corp. 1 J. D. Gillespie "C," J. B. McNeil Survey, 5 miles north of Jermyn, was showing for the country's first Ellenburger production. Production tests had not been made on last reports, but operators drilled the plug from the casing at 5,480 ft. at week's end.

In Clay County, Continental Oil Co.'s Ellenburger discovery, the 1 Roscoe Scott, TE&L Survey, 4 miles southwest of Vashti, made completion potential of 58 bbl. of 40°-gravity oil daily, on the pump, at 6,485-6,515 ft. Three acid treatments were made.

NORTH CENTRAL TEXAS SUCCESSFUL WILDCATS

Wichita County: D. D. Feldman 16 Waggoner "A," Sec. 31, H&TC Sur., 1½ mi. SW Electra, elev. 1,188 ft., IP pumped 28 bbl. oil a day, sand pay 1,790-1,809 ft., TD 2,374 ft., PB 1,855 ft.

Young County: R. S. Lesage 2 Jeffery estate, Douglas Brown Sur., 6 mi. N Graham, elev. 1,188 ft., IP flowed 50 bbl. 41-gravity oil a day, 15/64-in. choke, Caddo 3,919-36 ft., TD 3,943 ft., tubing pressure 250 lb., casing pressure 700 lb., GOR 1,000:1.

WEST CENTRAL TEXAS SUCCESSFUL WILDCAT

Haskell County: Thomas D. Humphrey 1 E. O. Chapman, H. Tidwell Sur., 7 mi. NE Haskell, pumped and flowed 195 bbl. oil in 12 hours, sand 4,240-4,315 ft., TD 5,470 ft., elev. 1,494 ft.

WEST CENTRAL TEXAS WILDCAT FAILURES

Callahan County: E. C. Lawson et al 1 Hutchinson, Sec. 136, BBB&C Sur., 1½ mi. NE Baird, dry, TD 3,875 ft., Palo Pinto 2,170 ft., Caddo 3,795 ft.

Haskell County: Thomas D. Humphrey 1 E. H. Burnett, J. Campbell Sur., 7 mi. NE Haskell, dry, TD 2,798 ft., Reef lime 2,770 ft.

Jones County: Bennett & Sorrels 1 H. W. Carter, Sec. 27, Austin & Williams Sur., 6 mi. E Hamlin, dry, TD 3,070 ft., Saddle Creek 2,597 ft., Flippen 2,645 ft., Gunsight 2,850 ft., elev. 1,664 ft.

Geochemical Surveys 1 W. R. Cranston, Sec. 11, Blk. 17, T&P Sur., 3½ mi. N Stith, dry, TD 4,480 ft., Flippen 2,413 ft., Gunsight 2,713 ft., DST 2,713-17 ft. recovered 90 ft. oil, acidized, tested 40 bbl. oil and 50 bbl. water, put on pump and oil exhausted.

KANSAS

Barber County Wildcat Logs Oil Show in Mississippi

W. H. SKINNER has run 5-in. pipe preparatory to testing a show of oil encountered in the Mississippi lime at the 1 Skinner, NE SW NE 5-32s-11w, Barber County wildcat 1½ miles southeast of the Whelan pool and 2 miles east of Medicine Lodge. The Mississippi was logged at 4,337 ft. and a 15-minute drill-stem test from 4,339-50 ft. recovered 65 ft. of oil and gas-

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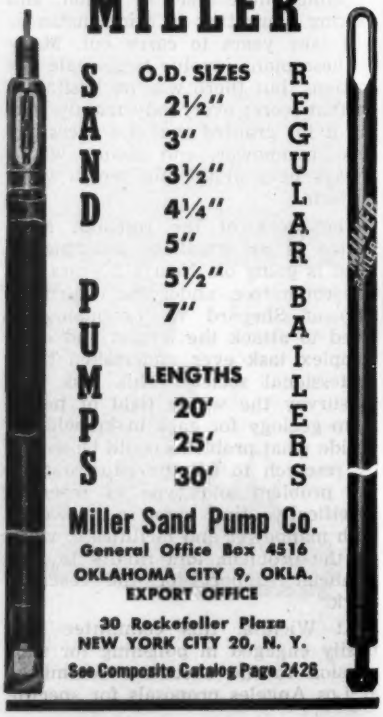

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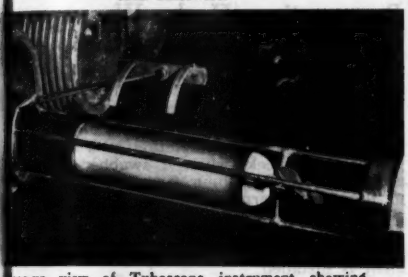

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cut mud and a trace of free oil. Pipe was set at 4,339 ft.

Bay Petroleum Corp. et al have an apparent strike at the 1 Houdyshell, NE SE SW 31-20s-15w, Barton County wildcat 3 miles southeast of the Pawnee Rock pool of Pawnee County. On a 10-minute drill-stem test at 3,844-50 ft. gas began showing at the surface in 2 minutes and recovery was 1,230 ft. of oil with no water. The Arbuckle was topped at 3,787 ft.

Lotus and Trojan et al 1 Feitz, NE NE SE 27-14n-19w, Ellis County wildcat, is reported to have nearly 1,200 ft. of oil in the hole from the Arbuckle, topped at 3,712 ft. and bottomed at 3,718 ft. The new strike is approximately 2 miles southeast of the Kraus pool.

KANSAS WILDCAT FAILURES

Barton County: Bridgeport Oil 1 Schneider "J," NE NE NE 31-17s-14w, dry, TD 3,433 ft., Topeka 2,884 ft., Heebner 3,096 ft., Lansing 3,168 ft., Arbuckle 3,405 ft.

Saline County: Westgate - Greenland Oil 1 Vanier, SE SW NW 8-14s-2w, dry, TD 3,400 ft., Lansing 1,950 ft., Mississippi lime 2,621 ft., Hunton 2,986 ft., Viola 3,184 ft., Simpson 3,319 ft., Arbuckle 3,392 ft.

OKLAHOMA

Northern Oklahoma Gets First 1947 Discovery

NOBLE County was the site of the first 1947 discovery during the past week when the C. C. Harwell 1 Greer, SW SW SW 24-23n-1w, flowed at the rate of 6 to 8 bbl. of 40°-gravity oil per hour from the Bartlesville sand. The oil flow was accompanied by an estimated 5,000,000 to 10,000,000 cu. ft. of gas, pressure of which blew the tools 1,600 ft. up the hole. Operator has now shut the wildcat in to install tanks and separator. The Bartlesville sand was topped at 4,374 ft. and drilled to 4,395 ft. Casing is set at 4,370 ft., or 4 ft. above the sand.

Texola Drilling Co.'s Hughes County discovery, the 1 Meadors, NE NE NW 31-9n-11e, has been holding a steady production of 554 bbl. daily during the past few days. The well was completed on January 8 for an initial production of 622 bbl. daily from the Cromwell sand at 3,090-3,110 ft., and its completion has apparently launched a new boom in that section of the state. Nine new locations were announced during the past week, bringing to 12 the number of operations now under way in the area.

OKLAHOMA WILDCAT FAILURES

Choctaw County: Cargill Brothers 1 Cowley, C SE SE SW 23-7s-15e, dry, TD 2,005 ft., lime 601-22 ft. with a show of oil.

Cimarron County: Pure Oil Co. 1 Charles E. Phillips, SW SE NW 31-5n-8ecm, dry, TD 4,970 ft., Blaine 945 ft., Day Creek 607 ft., Cimarron-anhydrite 1,621 ft., Keyes 4,632 ft., Mississippian 4,926 ft.

Comanche County: Art Wagoner 1 Wyatt, NW NW NW 16-1s-12w, dry, TD 1,915 ft., no tops reported.

Cotton County: Bay Petroleum Co. 1 Anderson, SE SE SW 5-2s-13w, dry, TD 2,040 ft., shale and Granite Wash 470-1,170 ft., Cambrian 1,865 ft.

Bay Petroleum Co. 1 Crockett, SW SW NW 9-2s-13w, dry, TD 1,505 ft., Granite Wash 779-1,000 ft., lime 1,097-1,100 ft., sand 1,133-43 ft.

Loual Drilling Co. 1 Hooper, SW SW SW 15-4s-12w, dry, TD 1,750 ft., no tops reported.

Garvin County: J. N. Crofton 1 Plummer, SE SE SE 1-3n-2w, dry, TD 5,775 ft., Bromide dense 5,280 ft., 1st sand 5,550 ft.

Greer County: E. K. McLennan 2 Meadors, SW NW NW 27-4n-22w, dry, TD 4,410 ft., sandy lime 2,415-30 ft., Arbuckle 4,365 ft.

Murray County: Sohio Oil Co. 1 Levalley, SW SW NE 24-2n-1e, dry, TD 3,050 ft., Base sand 2,276 ft., Bromide dense 2,707 ft., Bromide sand 2,972 ft.

Okfuskee County: Texola Drilling Co. 1 Replogle, SW NW SE 33-12n-8e, dry, TD 3,675 ft., no tops reported.

Pawnee County: Herndon Drilling Co. and Continental 1 W. E. Kelly, NE NW NE 24-22n-4e, dry, TD 3,800 ft., Layton 2,389 ft., Skinner 3,280-97 ft. with a show of oil, Mississippian 3,495 ft., Woodford 3,749 ft., Misener 3,777 ft., Simpson dolomite 3,780 ft., Wilcox 3,788 ft.

Tillman County: Keener Oil & Gas Co. 1 Arnt, SE NE NE 16-4s-15w, dry, TD 1,750 ft., no tops reported.

APPALACHIAN FIELD

West Virginia Test Logs Corniferous at 6,431 Ft.

PITTSBURGH.—In Williamsburg district, Greenbrier County, on the Appalachian frontier in southeastern West Virginia, the Texas Co. topped the Corniferous chert at 6,431 ft. in the rotary wildcat on G. R. Dean farm which, from a surface elevation of 2,575 ft., places that member 3,856 ft. subsea. It was cored 8,228-50 ft. and 4½ ft. recovered.

In Elk district, Kanawha County, United Fuel Gas Co. 5,800 Edward Gebhart topped the Oriskany sand at 5,366 ft. with 1,364,000 cu. ft. gas showing at 5,380-91 ft. The surface elevation is 1,044 ft.

New locations totaled 27 and were located in Boone, Braxton, Doddridge, Gilmer, Harrison, Kanawha, Lincoln, Marion, Mingo, Preston, Putnam, Ritchie, Wayne, and Wyoming counties.

In Patton Township, Allegheny County, southwest Pennsylvania, the scene of a recent large Sixth (Bayard) sand gas strike, Peoples Natural Gas Co., drilling a direct offset to the Starr or discovery well, struck a volume of 1,000,000 cu. ft. gas in the Hundred Foot sand at 1,878 ft. which had a rock pressure of 1,038 lb. It was cased off to drill down to the Bayard pay. Northwest of this a short distance, the T. W. Phillips Gas & Oil Co. test on Miller & Solomon lease was dry through the sand, total depth 3,161 ft.

New work totaled three locations which were located in Armstrong and Jefferson counties.

SOUTH LOUISIANA

Gas and Condensate Found in Cameron Parish

NEW ORLEANS.—A prospective new field opener, Magnolia Petroleum Co. 1-C Lutcher, in 24-14s-11w, approximately 1½ miles southwest of the shore line of Calcasieu Lake, Cameron Parish, encountered sands showing gas and condensate from 9,065-9,100 ft., 9,275-9,355 ft., 10,147-85 ft., and 10,401-07 ft. Total depth is 11,012 ft., where production pipe is being run.

Humble Oil & Refining Co. 1 Hibernia Bank & Trust Co., east extension test in the Laurel Ridge field of Iberville Parish, has made a flow test from a new sand and is shut in. Located in 68-10s-14e, the total depth is 10,660 ft. and 5½-in. casing is cemented 1 ft. off bottom. Perforations for completion are at 10,172-78 ft., where it flowed 89 bbl. of condensate along with 1,306,200 cu. ft. of gas through a ½-in. choke, gas-condensate ratio 14,630 to 1. This test was shut in after gaging.

There were 12 new locations reported this week, 3 being wildcats, 1 each in Iberia, Jefferson Davis and St. Mary parishes. Four dry wildcats were completed, one each in Plaquemines, St. Landry, St. Martin, and West Feliciana Parish. Six oil wells and one gas well were completed.

SOUTH LOUISIANA WILDCAT FAILURES

Plaquemines Parish: The Texas Co. 18 State-Delta Duck Club, 33-20s-20e, ¾ mi. NE of production, dry, TD 12,056 ft.

St. Landry Parish: Danciger Oil & Refg. Co. and W. W. Hawkins 1 Opie Dimmick, Belleview area, 26-7s-4e, 3 mi. N of Shuteston field, dry, TD 10,565 ft.

St. Martin Parish: Humble 1-B Williams, Inc., in Duck Lake area, 4 mi. SW of West Lake Verret field, 25-14s-11e, dry, TD 12,500 ft.

West Feliciana Parish: W. E. Allaun 1 Rosedown Plantation, in St. Francisville area, 67-3s-3w, 1 mi. N of St. Francisville townsite, dry, TD 7,530 ft.

PERMIAN BASIN

Preparations Under Way to Complete Midland Co. Test

MIDLAND.—Humble Oil & Refining Co.'s Midland County deep test, the 1 Mary E. Turner, 12 miles southeast of Midland, was headed toward completion as a small pumper last week, when it swabbed only 2 to 3 bbl. of oil an hour from perforations in the lower Permian at 8,500-65 ft. This amount was made after two treatments of acid, of 2,000 and 4,000 gal. Completion tests will be made when pumping equipment is installed.

Ellenburger production was extended ⅜ mile on the northwest side of the TXL field in Ector County, at The Texas Co. 11 E. R. Thomas. Daily flowing potential was 1,545.6 bbl. of 45.6°-gravity oil, with a gas-oil ratio of 1,411 to 1. The flow was through ½-in. choke on tubing set at 9,829 ft. Top of the pay zone was 9,744 ft.

Approximately 5 miles south of TXL, Phillips Petroleum Co. 1 Millard Eidson made a 1-hour drill-stem test at 10,834-84 ft., recovering only the water cushion and 180 ft. of drilling mud, with no shows. Drilled ahead to 10,934 ft., operators set packer at 10,884 ft., and another 1-hour test recovered 90 ft. of drilling mud and 60 ft. of drilling mud cut with salty, sulfur water. It was reported to be drilling deeper.

WEST TEXAS WILDCAT FAILURES

Andrews County: Anderson Prichard Oil Co. 1 H. M. Ward, Sec. 23, Blk. A-43, PSL, 1 mi. E Fuhrman field, dry, TD 4,607 ft., Grayburg 4,130 ft., elev. 3,215 ft.

Royal Oil & Gas Co. 1 Lotus Oil Co., Sec. 18, Blk. A-48, PSL, 2 mi. SW Fullerton field, dry, TD 9,180 ft., Yates 2,985 ft., San Andres 4,545 ft., Glorietta 5,680 ft., Tubbs 6,580 ft., Devonian 8,990 ft., elev. 3,281 ft.

SOUTHEASTERN NEW MEXICO

HOBBS.—Devonian Oil Co. 1 Federal, NW NW 19-9s-38e, in northeast Lea County, was preparing to complete as a small pumper, after swabbing clean oil at the rate of 10 bbl. an hour from the San Andres at 4,945-5,012 ft. This recovery was made after an acid treatment of 1,500 gal. Before completing, however, operators planned to retreat with 3,500 gal. of acid. Nearest commercial production is 20 miles to the east in the Landon field of Cochran County, Texas.

Drilling operations were active at several wildcat tests in the county. Fifteen miles north of Ochoa, Allen Hargrove 1 State, 1-23s-34e, was drilling ahead after a fishing job that delayed the initial drilling. The Texas Co. 1 W. C. Garrett, 22-

16s-38e, 8 miles northeast of the Lovington field, was below 4,947 ft. in lime. Sun Oil Co. 1-B McKinley, Hobbs field deep test, was below 7,764 ft. in lime.

SOUTHEAST NEW MEXICO SUCCESSFUL WILDCAT

Chaves County: DeKalb Agriculture, Inc. 1 N. T. Lewis, SE SW 13-10s-25e, pumped 7 bbl. oil and 9 bbl. water, 25° gravity, TD 5,650 ft., PB 1,275 ft. in San Andres, topped at 700 ft.

SOUTHEAST NEW MEXICO WILDCAT FAILURES

Eddy County: Harvey E. Yates 1 Yates-State, SW NW 32-18s-30e, 3¼ mi. SE Loco Hills, dry, TD 3,995 ft., Yates 1,522 ft., San Andres 3,042 ft., elev. 3,422 ft.

Lea County: Barney Cockburn 1 Corbin, NE NE 4-18s-33e, dry, TD 5,257 ft., anhydrite 1,350 ft., salt 1,600 ft., Red sand 4,238 ft., show oil 4,894-4,913 ft., swabbed 50 bbl. oil a day, PB 4,930 ft. (temporarily abandoned).

Neville G. Penrose 1 McCallister, NW NW 7-22s-38e, dry, TD 7,742 ft. in pre-Cambrian, PB 5,775 ft., Yates 2,490 ft., San Andres 3,840 ft., Glorietta 5,030 ft., Tubbs 6,145 ft., elev. 3,347 ft.

MICHIGAN

State-Owned Lands to Be Opened for Exploration

SAGINAW.—Oceana County, in which some interest has been developed due to a small oil discovery recently, is being made available for more exploration by the state conservation department. The department will conduct an auction of oil and gas lease rights on 24,110 acres of state-owned land January 31. Nearly half of the acreage is in Oceana. The producer is located 6 miles southwest of Shelby. Acreage also is being offered in Allegan, Arenac, Crawford, Gladwin, Lake, Mecosta, Muskegon, Newaygo and Roscommon counties.

Field activity was unproductive in the past week with 14 of the 16 completions chalked up as dry holes. Production was 50 bbl. a day from a well in Allegan. The other producer was a gas well in Roscommon County. Eight of the dry holes were wildcats.

Only five new locations were announced, three for Allegan County, two for Van Buren.

MICHIGAN WILDCAT FAILURES

Allegan County: Dorr Township: Clifford A. Perry 1 Edward Schoendorf, NW SE SW 4-4n-12w, dry in Traverse, TD 1,689 ft.

Lee Township: Stuart L. Godfrey 1 J. & D. Meshkin, SW NW NE 24-1n-15w, dry in Traverse, TD 1,261 ft.

Bay County: Gibson Township: Lincoln Drilling Co. 1 Johnson-Bradley Est., SE NW SW 36-18n-3e, dry in Dundee, TD 3,082 ft.

Gratiot County, North Starr Township: Ray W. Matlock 1 F. H. Peters, NE NE SE 2-10n-2w, dry, TD 907 ft.

Isabella County, Nottawa Township: C. W. Collin and H. E. Walton 1 Frank Bower, SE NE SE 23-15n-5w, dry in Dundee, TD 3,787 ft.

Midland County, Edenville Township: Union Drilling & Producing Co. 1 A. W. Guest, NW NW NW 5-16n-1w, dry in Dundee, TD 4,008 ft.

Montcalm County, Home Township: McClure Drilling Co. 1 E. E. Hackett, NE SE NW 26-12n-6w, dry in Monroe, TD 3,556 ft.

Saginaw County: Richland Township: Charles W. Teacher 1 Stephen Lacko, SE SE SE 34-12n-2e, dry in Dundee, TD 3,212 ft.

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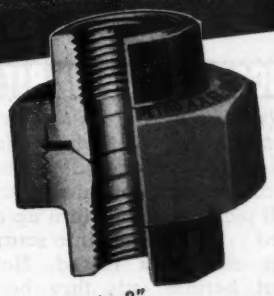

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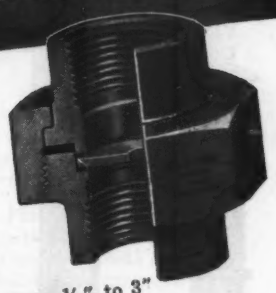

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EASTERN TEXAS

Carthage Field May Be Extended to North

DALLAS.—A north extension to the Carthage gas-distillate field in Panola County was in prospect at Continental Oil Co. 1 G. W. Bird, Sarah Harrell Survey. Operators had total depth at 6,338 ft., and set 6-in. casing to bottom. The upper Pettit, which had indicated commercial production, was to be tested through perforations at 5,848-82 ft. A previous drill-stem test at that level put gas to the surface in 4 minutes and in 1 hour the pressure was 1,675 lb., using a ¼-in. choke. With a 3/16-in. choke the pressure increased to 2,500 lb. Recovery was two stands of water-white distillate. Also, a 53-minute test at 5,061-70 ft., in the Hill section, recovered distillate-cut mud and some amber-colored distillate.

Houston County's closely watched wildcat operation, Standard Oil Co. of Kansas' 1 G. A. Lundy, in the B. P. Duncan Survey, 4½ miles northwest of Porter Springs, made a drill-stem test at 7,184-96 ft. Opened 40 minutes, it recovered the 1,700-ft. water cushion and 60 ft. of gas-cut mud. A second test at 7,183-7,208 ft. made approximately the same recovery. A third drill-stem test, at 7,214-38 ft., open 45 minutes, recovered the water cushion and 180 ft. of muddy salt water, and some 6,000 ft. of clear salt water slightly cut with gas and condensate. Cores, in the Woodbine, at 7,175-85 ft. recovered 9 ft. of fine-grained ashy sand with a gas odor, and at 7,185-96 ft. the recovery was fine to medium-grained sand, slightly porous, and having some permeability. Cores at 7,222 ft. recovered hard gray sandy shale, with no shows, and at 7,238 ft. there was hard gray to black shale. Operators were reported drilling ahead to contract depth of 8,000 ft.

EAST TEXAS WILDCAT FAILURE

Henderson County: Humble Oil & Refining Co. 1 W. J. Benge, W. D. Radcliffe Sur., 5 mi. NW Athens, dry, TD 6,642 ft., sample tops: Pecan 2,364 ft., Austin 3,370 ft., Woodbine 4,252 ft., Paluxy shaled out, elev. 455 ft.

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"AMERICAN" PARAFFIN BIT
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Remember, there is an "American" service man in every active field!

SOUTHWEST TEXAS

New Oil Field Discovered Northeast of Mercedes

CORPUS CHRISTI.—Roger Lacy 1 fee was completed as a new oil and gas field opener. Located in Hidalgo County, 6 miles northeast of Mercedes in the American Rio Grande Land & Irrigation Co. subdivision in J. J. H. de Bali Grant, this discovery was drilled to a total depth of 10,711 ft. and was dual-completed. Pay at 7,455 ft., with perforations at 7,455-65 ft., flowed an initial production of 9,600,000 cu. ft. of gas per day on open flow, with condensate ratio of 250,000 to 1. Production is from pay topped at 7,983 ft., with perforations 7,983-88 ft., was 74 bbl. of oil per day on gas lift, gas-oil ratio 800 to 1, and gravity 34°. This field will be called "Lacy."

A new pay zone has been opened for the Green field, Karnes County, by Van Norman Oil Co. 1 O. A. Mudd, northwest of Burnell-Wilcox field. This well flowed 111 bbl. of oil per day through a 5/32-in. choke from Wilcox perforations at 6,464-66 ft., with tubing pressure of 470 lb., and casing pressure 1,275 lb. Total depth is 6,680 ft., with 5½-in. casing on bottom.

A new pay for Pita field, Brooks County, has been opened by Humble Oil & Refining Co. 6-B D. J. Sullivan, in San Antonio de Encinal Grant. Total depth is 8,396 ft., with perforations at 7,771-80 ft. On potential test this well flowed 244 bbl. of oil per day through a ⅛-in. choke, gas-oil ratio 600 to 1, tubing pressure 1,250 lb., casing sealed.

SOUTHWEST TEXAS SUCCESSFUL WILDCATS

Brooks County: New oil pay, Pita field—Humble 6-B D. J. Sullivan, in San Antonio de Encinal Grant, top pay 7,766 ft., TD 8,396 ft., perf. 7,771-80 ft., IP 244 bbl. oil per day through a ⅛-in. choke, gas-oil ratio 600, TP 1,250 lb., casing sealed, gravity 38°, no water.

Hidalgo County: New pool discovery, Lacy field—Roger Lacy 1 fee, in Sec. 22, American Rio Grande Land & Irrig. subd. in J. J. H. de Ball Grant, 6 mi. NE of Mercedes, dual completion, top pay 7,455 ft., TD 10,713 ft., perf. 7,455-65 ft., IP 9,600,000 cu. ft. gas on open flow, with condensate ratio 250,000, shut-in pressure 2,834 lb., gravity 62°, no water, top pay 7,983 ft., perf. 7,983-88 ft., IP 74 bbl. oil per day on gas lift, gas-oil ratio 800, gravity 34°, no water.

SOUTHWEST TEXAS WILDCAT FAILURES

Atascosa County: Newman Bros. and Forest Oil Corp., E. W. Gill and Jergins Oil Co. 1 G. Friesenhahn, in W. W. Bomar Sur. 218, 3 mi. NE of Muil field, dry, TD 5,740 ft.

Gonzales County: Amerada Pet. Corp. 1 N. C. Stulting, in Robt. Kelley Sur., 6 mi. SE of Waelder, dry, TD 5,612 ft.

Jim Hogg County: Houser & Campbell 1 Carlos Guerra, Guerra Land, Share 12A, 30 mi. N of Rio Grande City, dry, TD 3,249 ft.

Karnes County: H. R. Smith et al 1 V. M. Butler, George Elliott Sur. 138, 4½ mi. NE of Fashing, dry, TD 4,010 ft.

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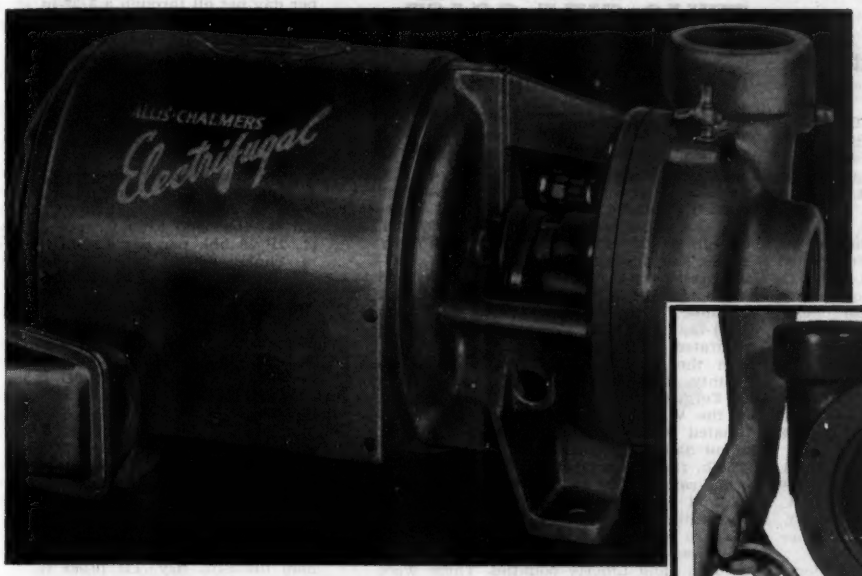

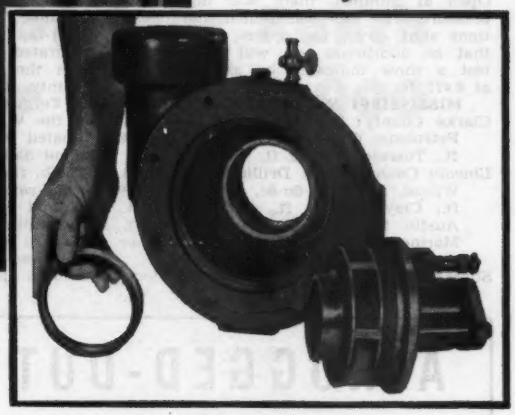

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AS THIS photo suggests an "Electrifugal" pump is simple and sturdy in design. Moving parts are few and easy to get at. The pump can be taken apart readily, for inspection and replacement of packings or wearing rings, when necessary.

Compact, rigid design gives you an efficient, quickly installed "package" pump ideally suited to a wide range of applications . . . low in first cost and cost of operation.

COMPLETE LINE OF CENTRIFUGAL PUMPS

In addition to "Electrifugal" pumps in capacities for 15 gpm to 1600 gpm, heads to 500 feet, motor hp ratings from ¾ to 25 hp — Allis-Chalmers designs and builds a complete range of sizes and types of centrifugal pumps up to capacities of 170,00 gpm.

In Allis-Chalmers' broad line you can select from single and double suction, single and multi-stage, liquids and solid-handling types . . . offered with and without Allis-Chalmers motors. Ask for bulletin B6018. ALLIS-CHALMERS, MILWAUKEE 1, WISCONSIN. A2072

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Electrifugal PUMPS

San Patricio County: Highland Oil Co. 1 Augusta Linnie Malone et al, Coleman-Fulton subd. of Patrick Fitzsimmons League, 5 mi. N of Odom, dry, TD 6,554 ft.

Starr County: Continental Oil Co. 1 Bernice Slick Druchel, in Rincon area, CCCSD&RGNG Sur. 505, 1 mi. NW of Rincon field, dry, TD 5,001 ft.

MISSISSIPPI

Testing Continues at Yazoo County Wildcat

JACKSON.—Reports on Carter Oil Co.'s Yazoo County wildcat, the 1 Carl Day, NE NE 9-12n-3w, 5½ miles northwest of Yazoo City, indicated operators were still trying to make a well. Corrected total depth was 6,506 ft. Plug set at 6,477 ft. did not hold, and when operators went into the hole with drill pipe, they could not find top of the plug. The fourth plug to be set, then drilled out to 6,463 ft., tested the upper Tuscaloosa sand at 6,455-63 ft. Open 51 minutes, there was no surface pressure. The tool was pulled and operations shut down for orders. It was said that an additional test will be made to test a show indicated by sidewall cores at 6,477 ft.

MISSISSIPPI WILDCAT FAILURES

Clarke County: Sun Oil Co. 3 Long Bell Petroleum Co., 17-2n-17e, dry, TD 4,198 ft., Tuscaloosa 4,142 ft.

Lincoln County: Cook Drilling Co. 1 B. B. Wilson, NE SE 4-6n-6e, dry, TD 10,679 ft., Clayton 8,280 ft., Selma 8,314 ft., Austin 9,034 ft., Tuscaloosa 9,552 ft., Marine Tuscaloosa 10,143-427 ft., Massive 10,655 ft.

Sharkey County: J. Willis Hughes 1 Houston estate, NE NE 4-10n-7w, dry, TD 4,022 ft., Wilcox 1,727 ft., Midway 3,005 ft., Clayton 3,443 ft., gas rock 3,449-70 ft., lower Cretaceous 3,470 ft.

FLORIDA WILDCAT FAILURES

Bradford County: Tide Water Associated Oil Co. 1 M. F. Wiggins, NE SE 15-6s-20e, dry, TD 3,167 ft., no tops reported.

Suwannee County: Sun Oil Co. 1 Earl Odom et al, NE NE 31-5s-15e, dry, TD 3,157 ft., no tops reported.

TEXAS GULF COAST

New Oil Producing Area Found in Liberty County

HOUSTON.—A new oil producing area in Liberty County, 6,400 ft. west of production in the Cleveland field, has been opened by Claud B. Hammill 1 J. C. Stewart. On potential gage it flowed 159 bbl. of oil in 23 hours through a 10/64-in. choke, showing 0.4 per cent water cut. Tubing pressure was 1,150 lb. while flowing and a gas ratio of 919 to 1. Total depth is 5,782 ft., and 5½-in. casing is perforated from 5,770-75 ft. in the Yegua sand. Top of saturated sand was 5,768 ft.

In the West Withers area of Wharton County, Joseph Hornberger, Jr. and John B. Ferguson 2 J. E. Carlson, wildcat test, in the W. D. Ivey Survey, reports an estimated initial production gage of 85 bbl. of oil daily through a 10/64-in. choke with 425 lb. flowing pressure on the tubing and a gas ratio of 300 to 1. Total depth is 5,544 ft., and 5-in. casing is on the bottom with perforations at 5,531-33 ft.

There were 16 new locations reported this week, 2 being wildcats, 1 each in Colorado and Liberty counties. There were 16 new oil wells completed, 1 gas well and 5 dry holes. Matagorda County received the greatest activity with four completions reported. Chambers and Jackson counties each received three completions. Seven wildcats were completed, three successful and four dry.

UPPER GULF COAST SUCCESSFUL WILDCATS

Jackson County: New oil pool—Blanco Oil Co. and Al Buchanan 1 John Lind, J. Heard Sur., 1 mi. SE of Stewart field and 1 mi. SW of Ganado field, TD 7,415 ft., perf. 7,059-60 ft., IP 45 bbl. per day net oil through a 3/32-in. choke, TP 1,400 lb., casing sealed, 50 per cent water.

Liberty County: New oil pool—Claud B. Hamil 1 J. C. Stuart, Thos. Devers Sur., TD 5,782 ft., perf. 5,770-75 ft. in Yegua, IP 159 bbl. oil in 23 hours through a 10/64-in. choke, gas-oil ratio 919, TP 1,150 lb., gravity 41°, 0.4 per cent water.

Matagorda County: New oil pool—Johnston & Johnston 1 F. Surkamp, Blessing area, in Josiah Tilley League, TD 10,005 ft., top sand 8,530 ft., perf. 8,533-35 ft., IP 38 bbl. per day through a 7/64-in. choke, gas-oil ratio 13,100, gravity 43°, 0.1 per cent water.

UPPER GULF COAST WILDCAT FAILURES

Chambers County: Texas Co. 1 Kirby Pet. Co., in Wm. H. Hodges Sur., on Barbers Hill east flank, dry, TD 12,855 ft.

Jefferson County: Humble 1 Dr. Rogers Pierson, in J. J. French Sur., 3 mi. SE of Lovell Lake production, dry, TD 9,900 ft.

Liberty County: National Assoc. Pet. Co. 1 B. H. Willis Estate, in Thos. Devers Sur., 3 mi. E of Devers townsite, dry, TD 9,503 ft.

Matagorda County: A. H. & C. L. Rowan 1 M. L. Robertson, ¼ mi. SW of Markham townsite, dry, TD 10,992 ft.

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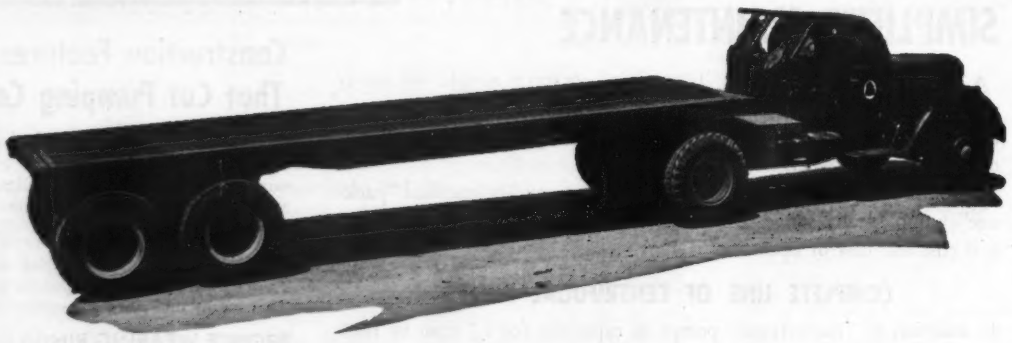

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OHIO, KENTUCKY

Two Good Oilers Extend Pools

COLUMBUS.—Mount Perry Coal Co. 2 Kehota Mining, Section 34, Madison Township, Perry County, ½ mile west of the No. 1, had a good oil well in the Clinton, at 3,349-81 ft. After a heavy shot, the well flowed and swabbed 50 bbl. in 24 hours.

Oil was found in a ½-mile east extension to the Tropic gas pool in western York Township, Morgan County. Zanesville Tool & Supply Co. 1-C Glen Pletcher, Section 35, drilled through the Clinton at 3,815-57 ft. After a shot the well flowed 31 bbl. with an estimated 300,000 cu. ft. gas.

Wildcats were started in Lorain and Meigs counties, while 13 other locations were scattered in six counties. Completions totaled 31.

WILDCAT FAILURES COMPLETED IN OHIO

Cuyahoga County, Solon Township: Hoey et al 1 Lynda Meikle, Lot 4, Clinton 3,680-3,807 ft., dry, TD 3,896 ft.

Medina County, Chatham Township: Ohio Fuel Gas Co. 1 E. C. Mueller, Lot 6, Clinton, dry, TD 3,140 ft.

EASTERN KENTUCKY

ASHLAND.—Activities in the eastern Kentucky field noted no completions during the past week, although a number of locations, setting of machinery, road building, completion of roads, etc., were listed.

Kentucky-West Virginia Gas Co. located on the Neal Roberts farm well No. 5,696 in Pike County, and tested for gas on the Carlisle Lands, well No. 5,714 in Martin County at a depth of 902 ft.

WESTERN KENTUCKY

OWENSBORO.—The Carter Oil Co. 1 Johnson, 5-N-23, Henderson County, wildcat, is waiting on cement with 7-in. casing set to 2,620 ft., following failure of a test to recover any oil shows. A 4-hour test of the McClosky at 2,626-2,731 ft. recovered only 100 ft. of drilling mud and 600 ft. of sulfur water. An electric log had previously indicated a show of oil in the McClosky at 2,551-58 ft.

Western Kentucky completions totaled nine during the past week, and included five oil wells, one gas well and three dry holes, two of the latter being wildcats. Only three new operations were announced, one each in Henderson, Daviess and McLean counties.

WESTERN KENTUCKY WILDCAT FAILURES

Henderson County: Carter Oil Co. 1 Rapier, 24-P-23, dry at 2,715 ft., Glen Dean 1,956 ft., Cypress 2,232 ft., Ste. Genevieve 2,509 ft., McClosky 2,512 ft.

Union County: J. W. Carter et al 1 Green Heirs, NW SW SW 7-P-20, dry at 2,674 ft., elev. 357 ft., Glen Dean 1,974 ft., Cypress 2,282 ft., Ste. Genevieve 2,475 ft., McClosky 2,492 ft.

INDIANA

EVANSVILLE.—W. F. Lacy is adding a good producer to the new Princeton townsite pool at his 1 Warnock, NW NW 8-2s-10w. A swab test of the Cypress sand at 1,810-23 ft., total depth, showed 11 bbl. of oil an hour with no water indicated. The well has now been given a 10-qt. shot and is cleaning out. So far, the wells drilled in this pool have been east of the townsite, but during the past week a new location was noted in the townsite. It is the National Consumers Oil Co. 1 Hardiman Comm., 860 ft. south and 337 ft. west of the northeast corner of Section 7-2s-10w, and the outcome of this well will probably determine the extent of the townsite drilling to follow.

INDIANA SUCCESSFUL WILDCAT

Gibson County: Superior Oil Co. 2 J. Hardiman, NE NW 18-2s-11w, elev. 392 ft., pumped 70 bbl. oil daily, McClosky 2,271-74 ft. and 2,278-81 ft., TD 2,371 ft.

ROCKY MOUNTAIN

Tests in Big Horn Basin Attracting Attention

DENVER.—Exploratory wells on four separate structures out in the Big Horn Basin, Wyoming, 6 to 12 miles west of the eastern rim, were high spots in the news. Pure Oil Co. 1 Unit, NE NE NW 18-48n-92w, River Dome, Washakie County, which reached a total depth of 11,379 ft. in the Big Horn lime below the Madison almost a year ago, and is still testing, ran into more trouble. The nipple hookup between the 7 and 5-in. casing failed to screw into the valve, and the gas broke into the pipe. Gas fumes were menacing the lives of men and women in the company's camp; and livestock in the area. Tracer bullets were shot into the gas to set it on fire. It is still burning, awaiting the arrival of specialists being flown in from Houston. The hole was plugged back to the Embar last March and casing was perforated at 9,970-10,055 ft. First test, open 4½ hours, recovered 4,500,000 cu. ft. of sour gas and estimated 400 bbl. of 42.7°-gravity oil. The tubing froze up above the 6,000-ft. level, and ice also blocked the casing. Since then much experimental work has been done on the well. Production has continued to be erratic, although other wells since completed have been more normal producers.

Eighteen miles south of the Pure operation, G. & G. Drilling Co. 1 Government,

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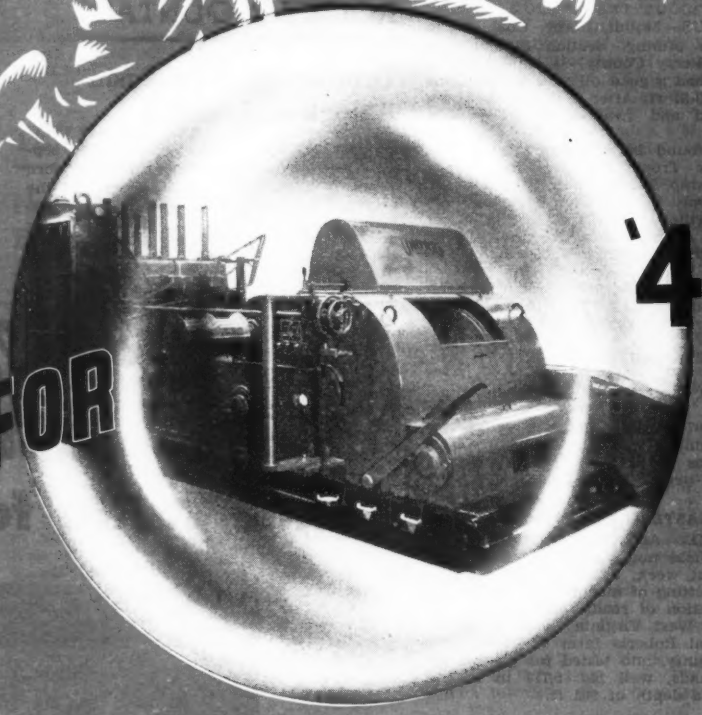

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SE NE NW 19-45-9w2, Neibor Dome, near the southern rim of the basin, experienced similar difficulties. It plugged back from a total depth of 10,980 ft. to 10,189 ft. to test the Embar. It flowed 6 to 8 bbl. of oil per hour with 6,000,000 to 8,000,000 cu. ft. of gas. It was then turned into the tanks and flowed 38 bbl. in 4 hours through ¾-in. choke when tubing froze up. The well is being killed with a blanket plug, after which an attempt will be made to pull the tubing. While it is a discovery, it probably will be several weeks before results are definitely known.

Carter Oil Co. 1 Five Mile, C NW SW 20-49-9w3, 8 miles northwest of the Pure wells, and most northerly of the four operations, is across the line in Big Horn County. It is drilling at 9,347 ft., having topped the first Frontier at 9,105 ft., and

(Continued on page 321)

CANADIAN FIELDS

Record Well Completed In North Turner Valley

CHATHAM. — In North Turner Valley, Home-Millarville 24, LSD 12, 33-20-3w5, is being placed on steady production with flush of close to 1,400 bbl. from Madison lime at 7,891-8,371 ft. With settled production this is expected to be one of the major producing wells in the north part of the field. Home 26 is drilling in LSD 15, 18-21-3w5, and Home 25 starting in LSD 3, 33-20-3w5, offsetting the new producer to the southeast.

Steveville. — Important new possibilities in the Steveville-Princess field, southern Alberta, are indicated by South Princess Joint Venture C.P.R. 3, LSD 12, 8-19-11w4. Bottoming at 3,326 ft., well is still testing with production from the Madison lime varying from 80 bbl. with 8/64-in. choke to 189 bbl. with 13/64-in. Production is water-free, and the well is expected to lead to considerable testing of the Madison south of the original Steveville-Princess field.

Kinsella.—In the Kinsella field, east-central Alberta, Imperial-Kinsella 19, LSD 11, 28-45-9w4, has finished at 2,051 ft. with 4,350,000 cu. ft. gas. Imperial Oil has announced that this well marks completion, for the present at least, of an intensive development program, which has proven gas reserves running into the billions of cubic feet. Following the completion, Imperial Oil has relinquished holdings of 38,720 acres in Townships 45-48, Ranges 10-14w4, near Kinsella, and 49,920 acres in Townships 36-39, Ranges 1 to 3w4 in the Provost field. A number of holdings by associated interests have also been relinquished. Plans for utilization of the gas reserves developed have not been disclosed, but a synthetic gas plant is believed in contemplation.

CALIFORNIA

Another Test for Washington State

STANDARD OF CALIFORNIA 1 Alderwood, in 35-28n-4e, in western part of the State of Washington, 8 miles northeast of Edmonds, in the vicinity of Martha Lake, was spudded and is now drilling around 1,000 ft. Location is based partly on seismograph work.

A substantial exploratory program is to be undertaken soon in the Northeast Coalinga area of Fresno County by the Sharples Corp. of Denver. The concern is reported to have about 7,000 acres under lease, mostly in Township 18s-15e. Location for the first well, however, has been staked in 6-19s-16e.

Southwest of the old Coalinga West Side field in 1-21s-14e, an outpost drilled by Finley Oil Co. as a Temblor test gave indications that it might be a small pumper. The well is bottomed in oil sand at 1,853 ft. and will be tested this week.

Contractor continued to cut and pull drill pipe in Pacific Western's record deep well, 1 National Royalties, east of the Lost Hills field in Kern County, and now has it removed to 14,227 ft. Pipe remains in the hole to 16,668 ft.

The first wildcat well in San Diego County in several years will be Shell Drilling Co. 1 Henle, in 29-11s-4w, near the town of Oceanside.

CALIFORNIA WILDCAT FAILURES

Kern County, Carneros Creek area: Anthony Oberholtz 1 Bosworth, 4-29s-20e, dry, TD 547 ft.

San Emidio area: Western Fuld Oil Co. 4 KCL-S. Emidio, 19-11n-22w, dry, TD 3,210 ft.

Fresno County, Mountain View area: Jergins Oil Co. 17 Bigelow, 1-31s-29e, dry, TD 3,053 ft.

Los Angeles County, Castaic area: Barnsdall Oil Co. 1 Dodge, 32-5n-16w, dry, TD 5,984 ft.

ILLINOIS

Rural Hill North Extension Gets Good Producer

MATTOON.—In the extension area 1 mile northeast of the Rural Hill field in Hamilton County, a test of the Aux Vases sand is under way at the Inland Producers et al 1 M. Cantrell, SE NE SE 6-6s-6e. The test is being made of a pay section in the sand at 3,094-3,109 ft. following a 150-qt. shot. Prior to the shot, the well swabbed oil at the rate of 2 bbl. an hour. There are now four producing wells in this new area, all of which have been completed for an initial production ranging from 50 to 250 bbl. daily. There have been no dry holes completed in the intervening area between these wells and the Rural Hill field.

In Marion County, National Associated Petroleum Corp. 1 George Boye et al, NW NE NW 21-4n-4e, wildcat 6 miles south of nearest production in the LaClede field of Fayette County, is waiting on cement with casing set to test the Aux Vases sand. Total depth of the well is 2,210 ft., and a 1-hour drill-stem test at 2,206-10 ft. resulted in the recovery of 10 ft. of clean oil and 190 ft. of oil-cut mud.

(Completions will be run next week.)

SUMMARY OF DECEMBER COMPLETIONS

	Comp.	Oil	Prod.	Gas	Dry	Under 1,000 ft.	1,000-2,500 ft.	2,500-5,000 ft.	5,000-10,000 ft.	Over 10,000 ft.	Total footage	Rigs and drilling
New York	108	54	163	0	*54	0	108	0	0	0	155,830	141
Pennsylvania	271	137	212	17	†117	14	235	22	0	0	420,066	228
West Virginia	54	12	150	33	9	1	18	21	4	0	129,843	244
Ohio	93	25	930	42	26	0	31	72	0	0	252,974	229
Indiana	49	26	1,369	0	23	6	30	13	0	0	108,439	63
Kentucky	54	20	1,162	15	19	5	29	20	0	0	112,671	58
Illinois	212	100	14,989	1	111	9	72	131	0	0	548,467	234
Michigan	66	16	930	17	¶33	1	45	20	0	0	129,824	117
Kansas	208	100	43,120	45	‡63	0	10	192	6	0	652,390	323
Neb., Mo., Iowa	0	0	0	0	0	0	0	0	0	0	0	13
Oklahoma	285	134	20,272	18	§133	9	131	108	36	1	825,340	474
Texas	594	368	78,262	29	197	35	119	206	216	18	2,737,654	866
North	135	83	7,088	1	51	21	56	43	15	0	365,454	198
West Central	48	19	1,340	1	28	3	17	28	0	0	121,974	47
West	159	134	54,249	1	24	1	21	64	65	8	864,219	131
Panhandle	22	11	1,592	8	3	0	0	22	0	0	69,734	101
Eastern	45	21	2,907	8	16	2	5	8	30	0	258,141	74
Upper Gulf Coast	52	28	3,185	2	22	0	0	6	39	7	393,250	110
Lower Gulf Coast	77	51	6,368	4	22	0	0	18	57	2	487,020	133
South	31	10	978	4	17	0	11	13	6	1	116,540	33
South Central	25	11	556	0	14	8	9	4	4	0	61,322	39
Louisiana	106	62	9,918	10	34	1	25	30	30	20	615,299	213
Northern	63	33	4,602	9	21	1	24	27	10	1	215,444	85
Southern	43	29	5,316	1	13	0	1	3	20	19	399,855	128
Arkansas	17	10	1,049	0	7	0	5	8	4	0	71,310	33
Mississippi	37	20	4,167	1	16	0	0	5	20	12	285,498	89
Ala., Ga., Fla.	3	1	57	0	2	0	1	2	0	0	7,685	20
Montana	14	7	236	6	1	1	10	3	0	0	24,490	43
Wyoming	11	9	1,169	0	2	0	2	5	4	0	47,025	74
Colorado-Utah	19	17	5,942	0	2	0	0	1	18	0	119,871	62
New Mexico	38	29	9,740	6	3	0	7	14	17	0	168,412	94
California	149	101	17,597	4	44	0	46	61	39	3	626,801	222
Total December	2,388	1,248	211,434	244	896	82	924	934	394	54	8,039,889	3,840
Total November	2,516	1,316	207,483	292	908	89	988	967	421	51	8,378,000	4,072

Service wells: *54, †114, ‡1, §6, ¶3.

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Hobbs, N. M. . . . 275-R

Among the Drilling Contractors

Drilling Group Outlines Proposed Course

At a conference of Kilgore College faculty members and officials of the American Association of Oilwell Drilling Contractors, at Kilgore, Tex., a projected course on oil-well drilling was outlined. It is believed this is the first course of its kind ever offered. The meeting was attended by 50 prospective enrollees, many of them ex-soldiers.

The pre-employment vocational course, which tentatively calls for 9 months of work, will begin January 27. The course is designed to meet the shortage of skilled men in the oil industry. A drilling rig will be erected near the school's athletic stadium to serve as a proving ground for the classroom training. According to E. C. Brown, of Los Angeles, vice president of A.A.O.D.C., emphasis is being placed on young men. The association will install equipment to the value of $100,000 for student use.

A. W. Payne, graduate of Pennsylvania State College, and formerly associated with Herschbach Drilling Corp., Dallas, will be instructor.

Danciger Oil & Refining Co. was moving in material to start the Sun Oil Co. 1 Leon Boyd, in 15-6n-8e, Lincoln County, Illinois.

Hewgley Drilling Co. has been awarded drilling contract on the Humble Oil & Refining Co. 1 Foremost, in NE SW 4-6s-25e, Clay County, Florida. The test is a wildcat.

Danciger Drilling Co. was rigging up rotary at the Sohio Petroleum Co. et al 1 F. M. Baker "C," in 34-6n-2w, Adams County, Mississippi.

N. V. Duncan Drilling Co., contractor on the Phillips Petroleum Co. 2 Bourland, in SE SE NE 15-7s-9e, White County, Illinois, was drilling at 2,573 ft.

Mallard Drilling Co. is the new firm name of the former C. C. Nelson Drilling Co. The firm is comprised of C. C. Nelson and A. H. Parks, of Wichita, and George H. Bunting, Jr., Kansas City, Kans., and Clare A. Stewart, of Kansas City, Mo. Max Wright has been appointed as the new office manager. No change has been made in company ownership.

Herndon Drilling Co. was drilling at 2,365 ft. at the Gulf Refining Co. 4 Gabriel, in NW SW NW 16-2n-7e, Clay County, Illinois.

Glasscock Drilling Co. has been awarded drilling contract on the Warren Petroleum Co. 1 Leroy Percy, in C SE NE 8-15n-7w, Washington County, Mississippi.

Harris Drilling Co. is contractor on the A. W. McDermott 1 Swift-Hunter Lumber Co., in SE NE 18-8n-7e, Monroe County, Alabama.

Earl Wakefield has drilling contract on the George Johnson and others 1 Brandenberg, in NE SE NE 36-31-2w, Sumner County, Kansas. Location is

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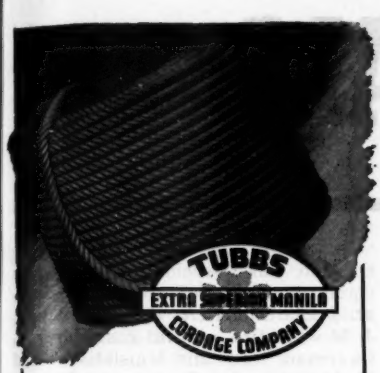

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2 miles west of the Wellington pool, and the test is being supported by E. B. Shawver.

O'Neal Drilling Co. is contractor on the Joe Reznik et al 1 Embree, which was drilling at 1,127 ft. at SE NE 29-6s-10e, White County, Illinois.

E. F. Moran was drilling at 2,702 ft. on the Carter Oil Co. 1 Josephine Johnson, in 5-N-23, Henderson County, Kentucky.

Zach Brooks Drilling Co. was building roads and moving in material for the Atlantic Refining Co. 1 R. G. Dunning, in 12-19n-16e, Clay County, Illinois.

Snyder & Head, Calgary, Alta., is reported spudding the 1 Berry Creek, LSD 3, 9-31-14w4, near Hanna, Alta., for which the firm has drilling contract. The test is primarily to secure a gas supply for the town of Hanna.

CALENDAR

February

Texas Railroad Commission, statewide proration hearing, Rice Hotel, Houston, February 18.

Southern California Meter Association Rio Hondo Country Club, Downey, February 20.

March

American Society of Mechanical Engineers, spring meeting, Mayo Hotel, Tulsa, March 2-5.

American Institute of Mining and Metallurgical Engineers, annual meeting, and World Conference on Mineral Resources, Waldorf Astoria Hotel, March 17-19.

Southern California Meter Association, Rio Hondo Country Club, Downey, March 20.

American Association of Petroleum Geologists, annual meeting, Biltmore Hotel, Los Angeles, March 24-27.

Western Metal Congress and Exposition Oakland, Calif., March 22-27, 1947.

Western Petroleum Refiners Association annual membership meeting, San Antonio, March 24-26.

Oil Heat Institute of America, annual convention, Traymore Hotel, Atlantic City, N. J., March 24-30.

Division of Production, American Petroleum Institute, Southwestern District spring meeting, Blackstone Hotel, Fort Worth, March 27-28.

April

National Association of Corrosion Engineers, annual convention, Palmer House, Chicago, April 7-10, 1947.

Indiana Independent Petroleum Association, spring convention, Springs Hotel, French Lick, April 9-10.

Board of directors, Rocky Mountain Oil and Gas Association, Northern Hotel, Billings, Mont., April 10-11.

Southern Gas Association, Biloxi, Miss. April 16-18.

Division of Production, American Petroleum Institute, Eastern District spring meeting, Pittsburgh, April 16-18.

Southern California Meter Association, regular monthly meeting, Rio Hondo Country Club, Downey, April 17.

Natural Gasoline Association of America, annual meeting, Baker Hotel, Dallas, April 23-25.

Natural Gas Department, American Gas Association, spring meeting, Stevens Hotel, Chicago, April 30-May 2.

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PERSONALS

Mack Long Active In Sunray Oil's Production

HARRY H. MACK, who recently opened Sunray Oil Corp.'s new production, land, and geological office in Los Angeles, is now rounding out his twentieth year with the company he joined 3 years after graduation from an Arkadelphia, Ark., college.

On the West Coast, Mack continues as a vice president. Sunray considerably expanded its California properties in the spring of 1946 by the purchase of a 7,000-bbl. daily refinery at Santa Maria from Bell Oil & Refining Co. of California and producing acreage from Bel-Air Oil Co. Sunray also is interested in some 75 wells in the Wilmington and El Segundo areas.

Mack has long been closely associated with Sunray's production activities in the Mid-Continent and Southwest. The company was 7 years old when he joined it in 1927 to do geological work. He was soon tackling production problems as a general trouble-shooter.

For several years in the early 30's, Mack served in a variety of jobs, both in the office and field. In 1934, he was placed in charge of field operations and a short time later, was designated general production superintendent.

In 1940, Mack was named vice president in charge of production, and in the summer of 1946, he was advanced to the company's No. 2 position when he was made assistant to the president. During Mack's nearly 20 years with Sunray, the company's crude production has grown from 315 bbl. daily to approximately 35,000 bbl. daily.

Harris T. Dodge has been appointed assistant to the vice president of The Texas Co.'s foreign-operations department. He is being succeeded as general sales manager of the department by **Orin B. Small,** assistant general manager.

Earle H. Clark, Breckenridge, Tex., has been made membership secretary of the Texas Mid-Continent Oil and Gas Association, succeeding the late W. H. Pullman. Clark is a former special agent for the Federal Bureau of Investigation.

Charles G. McLaren, Shell Oil Co., Inc., last week was elected chairman of the oil-industries committee of the Tulsa Chamber of Commerce, succeeding **David L. Trax,** Gulf Oil Corp. **Jack Wolfe,** British American Oil Co., was named vice chairman. **Howard Stover,** executive vice president, Gaso Pump & Burner Manufacturing Co., was host at the annual banquet meeting of the committee January 15 at which the new officers were elected.

Tom Corr has been transferred from Pecos, Tex., to Santa Fe, N. M., as northwestern New Mexico district manager for Southern Union Gas Co. He succeeds **O. B. Peacore,** who recently resigned.

George Wyrough and **John A. MacKay** have been named technical representatives of the Philblack division of Phillips Petroleum Co. Wyrough will serve the area comprising New Jersey, southeastern New York, eastern Pennsylvania, Maryland, and Virginia, with headquarters in Trenton, N. J. MacKay will be representative for New England and eastern New York, with headquarters in Boston.

George W. Herring, Texas - New Mexico Pipe Line Co., Midland, has been elected president of the recently organized West Texas-New Mexico Pipe Line Scouts Association.

Thomas O. Glenn, Jr., production engineer, has joined **Robert Wylie** and **Frank E. Lyons, Jr.,** in a partnership operating as Pennsylvania Oil & Gas Management Associates, in Oil City, Pa.

J. F. Cullen was named chairman of the production committee recently at the first quarterly meeting of the directors of the Rocky Mountain Oil and Gas Association. Other new committee chairmen are: **Frank Gower,** public lands; **A. Baker,** taxation; **J. M. McIntire,** natural gas; **Harry C. Chapman,** legal and legislative; **Fred M. Manning, Jr.,** finance and budget; and **H. P. Macauley,** public relations.

Fielding L. Mitchell has been transferred by Carter Oil Co. to Peru as a gravimeter field supervisor. He formerly was in the company's Tulsa laboratories. **Frank D. Meek,** gravity-meter engineer, will be sent to Venezuela on assignment early in February.

Bruce L. Groce has been sent to Venezuela as a production foreman for Creole Petroleum Corp. **Francis N. Finane,** formerly with Interstate Oil Pipe Line Co., and **W. L. Mullen,** a former civilian employe of the Navy at New Orleans, also have joined Creole in Venezuela, Finane as a district tank-farm foreman and Mullen as a district marine-transportation foreman.

C. M. Lamason, former vice president of Dornoil Products Co., Newark, N. J., and Liberty Fuel Oil Co., Kearney, N. J., has been placed in charge of the recently opened New York offices of Dale W. Moore Oil Co. of Houston.

A. S. Munneke, Stanolind Pipe Line Co., has been elected president of the Petroleum Luncheon Electric Club of Tulsa. Other new officers are **Paul W. Truman,** Sinclair Prairie Oil Co., vice president, and **Tom Feurt,** Nelson Electric Manufacturing Co., secretary-treasurer.

H. S. Watts, associated with Canadian Western Natural Gas, Light, Heat & Power Co. of Calgary for 33 years, has resigned from the company's directorate because of ill health.

R. S. Blazer, vice president of Allied Oil Co., Inc., has been named president of the Petroleum Club of the Cleveland, Ohio, Chamber of Commerce. Other new officers are **J. H. Donley,** division manager, Cities Service Oil Co., first vice president; **M. A. Weppner,** vice president, Ohio Mineral Spirits Co., second vice president; and **George J. Spellman,** assistant state manager, Sinclair Refining Co., secretary-treasurer.

Hugh Dickson, land agent for Shell Oil Co., Inc., in Oklahoma City, has been appointed assistant land manager for the Houston area.

George E. Burgher and the Bur-Kan Petroleum Co. have established offices in the Cole building in Tulsa.

J. W. Miller has gone to Venezuela to become technical coordinator with Creole Petroleum Corp. He has been in charge of yield and cost accounting for the chemical-products division of Standard Oil Co. of New Jersey (Louisiana division).

W. E. Tracy, chief scout in the Marshall division for Ohio Oil Co., has been named crude-oil purchaser for the company in Illinois and Indiana.

Herman G. Gunter, process superintendent of the Baltimore refinery of Standard Oil Co. of New Jersey, has been transferred to Billings, Mont., as assistant to **Paul C. Shea,** Carter Oil Co. vice president.

Albert S. Trube, reservoir engineer for Tide Water Associated Oil Co. in East Texas, has been transferred to the Houston office of the company. **W. E. Brown,** field engineer at Kilgore, Tex., is being transferred and made a district engineer at Magnolia, Ark.

Thomas W. Moore, industrial-relations manager at the Baytown, Tex., refinery of Humble Oil & Refining Co., has been appointed to the newly created position of adviser in the company's executive - development program. He also will serve as supervisor of Humble's training division. He will be succeeded as industrial relations manager by **William Grant, Jr.,** assistant chief safety engineer in Houston.

William M. Stratford has been elected president of Texaco Development Corp., succeeding **R. J. Dearborn,** who has retired after 27 years with The Texas Co. and the development firm. **William P. Gee** and **Charles F. Teichmann** have been elected vice presidents of the development corporation.

Wayne H. Denning, in charge of United Geophysical Co. seismograph operation in Brazil the last 6 years, is scheduled to return to Ponta Grossa, Brazil, late in January upon completion of a leave of absence. **Lawrence K. Morris,** operations chief in Chile for the past 4 years, is on leave in the United States and will return early this spring when the company begins work again in the Tierra del Fuego region.

Shifts

Leo F. Parcel, foreman, Shell Oil Co., Inc., Lost Hills, Calif., to Fellows, Calif.; **David H. Scott,** geologist, The Texas Co., Santa Barbara, Calif., to Bakersfield, Calif.; **Elwood Layfield,** engineer, Ralph M. Parsons Co., Sierra Madre, Calif., to San Marino, Calif.; **Roy C. Jeter,** engineer, Western Gas Co., Jal, N. M., to Durango, Colo.

R. J. Emmer, engineer, Stanolind Oil & Gas Co., Andrews, Tex., to Wink, Tex.; **C. T. Riley,** superintendent, Superior Oil Co., Andrews, Tex., to Notrees, Tex.; **James Pope Kelly,** superintendent, Roeser & Pendleton, Athens, Tex., to Brookhaven, Miss.; **R. W. Beatty,** superintendent, Humble Oil & Refining Co., Katy, Tex., to Genoa, Tex.; **T. M. Curtis,** engineer, Stanolind Oil & Gas Co., Fort Worth, Tex., to Odessa, Tex.

T. P. Ryan, engineer, Standard Oil Co. of Texas, Houston to Midland, Tex.; **M. S. Legge,** engineer, Stanolind Oil & Gas Co., Pampa, Tex., to Hobbs, N. M.; **Kenneth E. Thorp,** superintendent, Cities Service Refining Corp., Lansing, Ill., to Lake Charles, La.; **E. H. Gibbons,** superintendent, Sinclair-Wyoming Oil Co., Carmi, Ill., to Great Bend, Kans.; **Rex E. Cheek,** engineer, Stanolind Oil & Gas Co., Pikeville, Ky., to Tulsa.

S. E. Wallette, superintendent, Humble Oil & Refining Co., Waynesboro, Miss., to Franklin, La.; **C. B. McClintock,** engineer, Madison, Ohio, to Oil City, Pa.; **R. S. Railey,** superintendent, Sharples Corp., Springfield, Colo., to Coalinga, Calif.; **N. J. Stewart,** foreman, Leonard Refineries, Inc., Arkansas City, Kans., to Newkirk, Okla.; **W. E. Hughes,** foreman, Alkay Oil & Gas Co., Zenith, Kans., to Stafford, Kans.; **Doyle C. Huffines,** superintendent, Donald T. Ingling, Hays, Kans., to Sterling, Kans.

F. M. Beal, engineer, Carter Oil Co., Independence, Kans., to Seminole, Okla.; **J. A. Jackman,** superintendent, Sinclair Prairie Oil Co., Bairol, Wyo., to Carmi, Ill.; **Gus Bealmear,** engineer, Baroid Sales Division, Worland, Wyo., to Riverton, Wyo.; **William O. Batson,** superintendent, Sinclair Prairie Oil Co., Covington, Okla., to Shidler, Okla.; **John Roy Johnson,** engineer, Shell Oil Co., Inc., Elk City, Okla., to Wichita Falls, Tex.; **Bernard Shanker,** superintendent, Rudco Oil & Gas Co., Seminole, Okla., to Oklahoma City, Okla.

Newly elected officers and committee chairmen of the East Texas section, American Institute of Mining and Metallurgical Engineers, meeting for the section's first session of the year in Kilgore. Seated: Phil J. Lehnhard, East Texas Engineering Association, chairman, program committee; R. W. Stuart, Stanolind Oil & Gas Co., Fort Worth, speaker for the meeting; Thomas C. Frick, Atlantic Refining Co., Greggton, section chairman; Don M. Kerr, Kerr Engineering & Construction Co., Kilgore, chairman, membership committee; Dan M. LaRoe, Tide Water Associated Oil Co., Kilgore, chairman, auditing committee. Standing: R. T. Wade, Schlumberger Well Surveying Corp., Shreveport, section vice chairman; J. C. McCormick, Dowell Incorporated, Kilgore, chairman, hospitality committee; R. M. Hess, Shell Oil Co., Inc., Kilgore, chairman, committee for development of junior engineers; Paul J. Moore, Gulf Oil Corp., Kilgore, secretary-treasurer; and O. L. Furse, Humble Oil & Refining Co., Overton, chairman, publications committee. Not shown is H. L. Long, Lufkin Foundry & Machine Co., Kilgore, chairman, publicity committee

Equipment Men in the News

Dr. Coloma Silva Ecuador Representative

DR. COLOMA S.

Victor E. Milch, resident partner in the United States of Transamerican Factors, Ltd., with headquarters in Los Angeles, has announced the appointment of Dr. Enrique Coloma Silva as representative in the Republic of Ecuador. He will be in charge of the company office at Casilla 251, Quito, Ecuador. Dr. Coloma is affiliated with numerous technical organizations in South America, and only recently resigned his position as technical director for the petroleum industry in the Ministry of Economics for the Republic of Ecuador, to assume his new assignment with the technical staff of Transamerican.

Fetzer Member of Mack Directors

Announcement is made of the election of A. C. Fetzer, vice president, to the board of directors of Mack Manufacturing Corp. Fetzer, who was acting general sales manager, was at the same time appointed general sales manager.

Changes in Management on Kobe Sales Staff

Kobe, Inc., has announced a change in management personal in two of its sales division offices. M. L. Walraven, Jr., former sales manager of the northern sales

M. WALRAVEN, JR.

HARRY WILSON

division, has been assigned the position of southern-area sales manager, with headquarters in Dallas. He will be in charge of all sales and technical activities in Texas, Louisiana, Arkansas, and New Mexico. Management of the northern area sales office, with headquarters in Tulsa, will be filled by Harry Wilson, former Oklahoma district manager. He will have charge of the company activities in Oklahoma, Kansas, Nebraska, Illinois, and the Texas Panhandle. R. G. Ralph, division manager in Oklahoma City, will continue to direct the two division sales offices.

Seismograph Service Representatives Abroad

Gerald Westby, president of Seismograph Service Corp., returned to this country this week after spending a week in Mexico. T. A. Manhart and J. E. Hawkins left Tulsa last week for Cairo, Egypt, to visit the company's operations in the Near East. They will return in mid-February. Recent company transfers include Victor Graf, from Trinidad to London, where he will join Seismograph Service, Ltd., a subsidiary; and Noel Frost, who has been sent to France to become the company's French representative.

Adams Returns From South America

E. T. Adams, representative of Kerotest Manufacturing Co., Pittsburgh, has recently returned from an extensive tour of the oil fields of South America, and reports remarkable development and progress there. His tour was principally concentrated on the countries of Colombia, Peru, Ecuador, Venezuela, and Trinidad.

Reed Joins Dallas Tank

M. V. REED

W. W. Banks, president, Dallas Tank Co., Inc., announces the appointment of Malcolm V. Reed to the office of assistant to the president. His new duties will be of a general administrative nature.

Collins Joins Ideco

Appointment of T. D. Collins as vice president, Mid-Continent direct sales, has been announced by O. M. Havekotte, president, International Derrick & Equipment Co. Collins makes his headquarters in the Ideco Building, Dallas, and is in charge of supply stores and direct sales in the Mid-Continent, Gulf Coast, Rocky Mountain, and Illinois divisions.

Elgin Softener Appoints Scarritt

Chester T. McGill, president and general manager of Elgin Softener Corp., Elgin, Ill., has announced appointment of Elwood W. Scarritt as assistant general manager. For the present he will continue to act in his old capacity as industrial sales manager in adidtion to his new duties.

Seavey and Fluor Directors of Fluor

T. H. "Ted" Seavey, manager of purchases, and J. R. "Bob" Fluor, manager of manufacturing, have been appointed directors of The Fluor Corp., Ltd. Seavey has been with the firm since 1931, and Fluor, who was an Army Air Force pilot during the war, rejoined the company last June.

Leindecker and Curll Promoted To Vice Presidents

BMC Manufacturing Corp., Binghamton, N. Y., announces the elevation of works manager, W. A. Leindecker to the position of vice president in charge of manufacturing; and sales manager, H. V. Curll to vice president in charge of sales, effective January 1.

G. E. Establishes New Department

General Electric Co. has established an Affiliated Manufacturing Companies Department, and appointed Vice President L. R. Boulware as general manager, President Charles E. Wilson has announced. E. J. Harrington has been appointed manufacturing manager of the new department, and Roy W. Johnson marketing manager. The manufacturing affiliates include: Carboloy Co., Inc., General Electric X-Ray Corp., Hotpoint, Inc., Locke Insulator Corp., Monowatt Electric Corp., Telechron, Inc., and Trumbull Electric Manufacturing Co.

Sullivan Texas Representative

N. SULLIVAN

Nelson Sullivan will represent Union Wire Rope Corp., Kansas City, Mo., in Texas. Sullivan's headquarters will be at the company's branch, 5803 Navigation Boulevard, Houston. R. O. Tuxson is the manager of the Houston branch.

U. S. Steel Appoints Schreiner and Wilcox

G. Reed Schreiner has been appointed assistant director of advertising of United States Steel Corp. of Delaware, it has been announced by David F. Austin, sales vice president. Schreiner, formerly advertising manager of Carnegie-Illinois Steel Corp., succeeds Reese H. Price, who has resigned. Simultaneously appointed was Robert J. Wilcox as acting advertising manager of Carnegie-Illinois succeeding Schreiner, it was announced by Thomas J. Hilliard, sales vice president of this United States Steel subsidiary.

Huizing Represents W-S In New England

C. Huizing has been named New England representative for Watson-Stillman Co. He was formerly in the sales department as sales engineer. Announcement of Huizing's new appointment was made by A. G. York, vice president in charge of sales, at the main offices in Roselle, N. J.

Caterpillar Adds Parts Consultant

Caterpillar Tractor Co., Peoria, Ill., has created the job of parts consultant in its parts department with W. B. Gordon, former inventory control manager, appointed to the new position. J. G. Hamner has been promoted from parts technical manager to inventory control manager, and H. F. Haven promoted from assistant parts manager, western division, to parts technical manager. E. L. Mason, who has been central division assistant parts manager, takes the western division post vacated by Haven, and C. F. Cummings becomes assistant parts manager of the central division.

New Ideco Supply Store Opens

Opening of the new Ideco store at Hutchinson, Kans., has been announced by C. A. McClelland of International Derrick & Equipment Co. Glenn Burris will manage the store and Charles E. Hamlin will act as sales representative. R. R. (Lefty) Matthews, district manager for Kansas, will supervise the activities from his headquarters at Great Bend.

Sturtevant Retires

Walter L. Sturtevant, chemical engineer at the Manhattan Rubber Division plant, Raybestos-Manhattan, Inc., Passaic, N. J., was honored on his retirement at a dinner December 17 at Robin Hood Inn, Clifton, N. J. More than 100 friends and coworkers attended. Sturtevant had been chemical engineer since 1931 and had represented the company on various government and scientific committees.